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ABSTRACT

This study examines, within a single model, the relative influence of family, school, and work group participation upon different levels of political efficacy and participation within a developmental context. The study is a preliminary analysis because only data for the U.S.A., Great Britain, Germany, Italy, and Mexico were obtainable. Guttmen-type scales were generated for nonpolitical forms of participation in family, school, and work group as well as for political efficacy and participation. Significant nonlinearity of the relationships between dependent and independent variables suggested the use of the "dependency analysis" form of causal modeling in place of path coefficient analysis. Discussion of the many findings is extensive. (DE)

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FINAL REPORT

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A CROSS NATIONAL STUDY OF THE RELATIVE INFLUENCE OF SCHOOL EDUCATION: A CAUSAL ANALYSIS

Kenneth P. Langton

with the
assistance of

David A. Karns

University of Michigan
Ann Arbor, Michigan

June 1969

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U. S. DEPARTMENT OF
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SUMMARY OF FINAL REPORT

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PROBLEM

A number of studies have examined the bivariate relationships between the school environment, on one hand, and civic efficacy and political participation, on the other. Other studies have investigated the bivariate relationships between family and adult work group environment and similar dependent variables. No study, however, has attempted an empirical, multivariate demonstration of the linkage between a selected aspect of the family, school, and work group environments and civic efficacy and participation. While the role of the school in the civic socialization process has provided the core for considerable research, the more comprehensive question of the relative role of the school, family, etc., has been avoided.

Another problem given scant attention is that of the truncated effect of agents in the socialization process. That is, the school may reach the height of its influence when it moves children to the medium level of civic confidence, while the distribution in the higher reaches of this dimension depend on the face-to-face milieu of the family, peer, and work groups. These truncated relations tend to depress standard correlation coefficients which are then often used as an argument against significant linkages, yet they clearly may be descriptive of the actual connection between selected socialization agents and relevant dependent variables. Thus the eventual mapping of the socialization process requires a mode of analysis which permits the investigation of the relative, possible truncated influence of different agencies within a single mathematical model. The relative influence of socialization agents also may vary considerable across national cultures. To minimize culture-specific generalizations, comparative data is necessary. This raises a fourth problem: explaining the rank order differences in relative influence found across nations. A partial answer may lie in the different levels of social and economic development of the countries.

OBJECTIVES

The four problems outlined above lie on the substantive and methodological frontier of research in civic socialization. In this report we shall examine within a single model the relative influence of family, school, and work group participation on different levels of political efficacy within a developmental context.

METHOD

The proposed analysis requires individual data across nations at different levels of development. Such data hopefully will be forthcoming ffom a comparative socialization study on which the author has embarked. For the present report, however, we conducted a preliminary analysis and test of hypothesis using data from the Five Nation Study of Gabrial Almond and Sidney Verba. All five studies (USA, Great Britain, Germany, Italy, and Mexico) were based on probability samples of adults.

Guttman type scales were generated for non-political forms of participation in family, school, and work group as well as for political efficacy and political participation. Path coefficient models and a technique of instrumental variables indicated that the causal arrow leads from political efficacy to political participation in each country. Path coefficient analysis, however, requires that the independent and dependent variables be linearly related. This was not the case for the links between the agents and efficacy. We chose, therefore, not to use path coefficients based on correlation coefficients because we felt that nonlinearity of the dependence relations was substantively significant and should be retained if possible. In other words, we wanted to illuminate rather than mask the possible truncated influence of the socialization agents.

Instead of path coefficient analysis, we opted for a different form of causal modeling, dependency analysis. This technique offers a number of substantive and methodological advantages. With this technique it is possible to estimate the relative role of each agent within a single model and also to determine how each independently affects each level of the dependent variable. A major problem in the social sciences is that much of the information communicated falls on deaf ears because of the high levels of technical expertise assumed of the would be recipients. A definite advantage of dependency analysis is the readily interpretable nature of the findings: dependency coefficients easily converted to percentages.

FINDINGS

1. The job: Although the job may be the most immediate environment for the adult respondents in the five countries, it definitely is not universally the most influential socialization agent. More importantly, its influence and that of the other agents varies considerably with the developmental level of the country.

2. Linearity: The relations between the independent and dependent variables are not linear. That is, the socialization agents do not have equal impact at the medium and high efficacy levels.. Therefore, a mode of analysis based on the assumption of linear relations would have obscured important differences in the data.

3. Truncated effect: Summing the influence of each of the three agents across the five countries shows the face-to-face environment of the family and job to be more influential in developing a sense of efficacy than the broader, less intimate school environment. This finding is similar to our previous experience in the Caribbean in which the family and peer group are more influential than the wider, less personal milieu of the school in developing a sense of political confidence among adolescents.

The job is slightly more effective in moving people from low to medium efficacy and the family from medium to high. However, there is considerable cross-national variation which suggests that at this stage in our research we might do better to focus on isolating the system level developmental and cultural characteristics that account for the variations rather than attempt universal generalizations about relative influence based on a small number of dependent variables and a narrow range of agential characteristics.

4. Development and relative influence: Our study suggests the following link between levels of economic and social development and the relative role of the family, school, and work group in the socialization process.

During the pre-industrial phase the family begins to distinguish itself from the lineage group and take a short-extended or nuclear form. Schooling outside of the family is not likely to exist or to operate only at the primary level which often is not culturally distinct from the family. Work environment is pre-modern, new work norms have not penetrated or exist only at low intensity levels. At this stage in development the family dominates the socialization process.

As economic and social development continues, culturally distinguishable secondary education expands. Industrialization leads to different forms of employment that penetrate society and intensify participation norms and new work relations. Both the school and job now compete with the displace the earlier dominance of the family. In later stages of development the quality of family life changes as parents become more educated and attentive to political phenomena. The relative influence of the school decreases as the norms and information it imparts become increasingly redundant and the impact of family reaches greater parity with job influence.

Among the five countries surveyed, Mexico is the least developed and the closest fit to the model of a less-developed country. Here we do find the family dominating the political socialization process followed at considerable distance by the school and job. In the two countries in the middle rank of the developmental scale, family dominance does succumb to the enlarged roles of the work group and school. In the United States and Great Britain, the two most developed countries, the influence of the school predictably declines in relative importance while the family rivals the job in influence.

5. Relative influence of agents among the more educated: We hypothesized that the expansion of secondary education is likely to have a very different short-term effect in less industrialized nations than its long-range impact in the more developed countries. In Mexico the expectation was that for the small minority exposed to secondary education, the initial impact of this non-redundant stimulus would be to challenge the pre-eminent position of the family in the socialization process. The data clearly support this contention. Among the more developed countries, however, the expansion of secondary education has led to succeeding generations of better educated parents. The quality of family life has changed and new norms that once penetrated the society from work group and school have become increasingly redundant. In two of the four most developed countries family becomes the most influential agent among the more educated strata while in Germany it displaces the job in assuming a position secondary to school influence.

The stronger showing of the secondary school among the more highly educated in Germany (particularly among the younger respondents) is reminescent of the secondary school's strong penetration in Mexico. Some authorities have argued that the experience of Germany since WWII resembles in some respects that of new nations. Faced with the task of creating a new political culture, the Germans needed to rebuild and change the schools. To the extent that demands for more emphasis on student participation in the schools have been realized, the resultant increase in school impact should be similar to the penetration of a less developed country by modern secondary education. That is to say, we would expect to find as we did that secondary education in Germany has an important influence upon the development of civic efficacy.

In every country (except Great Britain) job influence is reduced or low (as in Mexico) among those with higher education. Competing information sources and the broadened horizons of the educated combine to reduce work group effect. Among the more developed nations job environment has its greatest impact among the least educated. The strata less likely to have learned participatory skills in the family.

Only in Great Britain does work environment have a significant influence on political efficacy both at the high and low education levels. It is likely that the history of labor organization in Great Britain has played an important role in intensifying the employee's sense of job participation and its translation into political confidence, both among the lower and middle classes. For example, British unskilled, skilled, and white collar workers all distinguish themselves from their counterparts in the other nations by their greater sense of freedom to protest job decisions that are not in their interest.

6. Socialization and policy implementation: What insights can the policy planner or interested citizen expect from the student of political socialization? To date, social scientists have given little attention to the implications of socialization research for the implementation of values. This has been particularly troublesome for those interested in political and social development, an area in which the scholar's interest in sociopolitical manipulation has been more overt. Certainly a better understanding of the socialization-polity linkage, in both historical and comparative perspectives, would not only enrich our theoretical interest in patterns of political change, but would contribute also to our pragmatic interests in the direction of political evolution. Therefore it seems useful to illustrate how a portion of our findings bear on certain practical problems of political development.

Mexico, the least industrialized country, may be the more interesting case. You will remember that the family dominated the socialization process for the sample as a whole. But only a small portion of this population had been exposed to secondary education. Among those who had, the participatory milieu of the school played a significant role and had an important bearing on the national distribution of efficacy. Assume for the moment that a national policy planner is concerned with increasing the level of political participation. It has been shown elsewhere that there appears to be a relatively uncomplicated link between organizational involvement and political participation. However, it seems prudent to point out that many development experts are concerned about the burdens of this form of mobilization, particularly from the strata which does not have the attendant gate keeper attitudes which the planner may wish to have associated with political life. Since we are able to link political participation, efficacy, and participatory environment of the secondary school in Mexico, one of the more malleable social institutions, three questions are raised:

1) What would be the effect on the national distribution of civic efficacy of expanding by two-thirds the proportion of the school age population who actually attend secondary school (now 12%)?

2) What would be the impact on national distribution of efficacy of increasing by two-thirds students' sense of participation in the secondary schools?

3) Can we assume that those who possess higher levels of political confidence also are more politically tolerant and accommodating?

At present we cannot answer the last question in Mexico. However, there is data which can be brought to bear which will be the subject of future inquiry. While we possess no crystal ball, under a set of assumptions we can give a partial answer to the first two questions by providing the planner with estimates based on projection of the effect of changing the distributions.

Assuming that the dependency relations would remain the same, increasing the present secondary school population by two-thirds would have its primary effect on those with low efficacy. Their ranks would be reduced by 8 percent as they moved for the most part into the medium efficacy range. The cumulative consequence of increasing the secondary school population and increasing the sense of school participation by two-thirds would be to reduce the national distribution of low efficacy by 16 percent*—the majority of these people being moved into the medium efficacy level with a 3 percent increase in high efficacy. The reduction by 16 percent of those with low efficacy clearly would have an impact on the political culture of the country, particularly if this form of mobilization via the schools rather than through organizational involvement is accompanied by learned norms of tolerance and compromise.

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*Sixteen percent is a low estimate since there will be an additional boost from the structural effect of increasing participation in the schools. See below for "structural effect."

Because the secondary school population is so small, however, boosts in that population even of this magnitude represent a minor intervention. Changes of 200 to 300 percent are necessary if major restructuring of the political culture is demanded.

7. Structural effects: With the exception of Germany, the additive effect of the three agents on political efficacy follows the level of economic and social development in the five countries. A variant of the structural effect thesis may be helpful in interpreting this change. That is, people with similar scores on an independent variable (high agential participation) will have different rankings on the dependent variable (political efficacy) as the distribution of agential participation differs in the groups or society in which they are members. In other words, an individual's participatory experience in a socialization agency is more likely to be translated into civic confidence in a society in which participation in non-political decision making is more the norm than the exception. Thus the additive effect of the three agents plus a fourth factor, the distribution of these participatory experiences, contribute to the development of political efficacy.

The frequency of agential participation is linked to education of the respondent in each country. The size of the educated strata increases with developmental level. Therefore we might expect the positive relation between development and the additive influence of the agencies.

On the other hand, we have surveyed only a limited range of variables. Non-political participation has a natural and necessary agential link. But it is not difficult to think of variables for which this is not the case. For example, if we examined opinion or issue formation the congruence between the opinion climate of the three socialization agents and that of the respondent would most likely decrease as we moved from the less developed to the more developed nations where the respondent is exposed to an enlarged communication media and more varied and compelling sources of information.

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The new research and literature in the area of political socialization raises many important questions as to the contribution and direction of this rapidly expanding field of inquiry. The relevance of the socialization process to the maintenance and change of larger political systems has already received considerable attention at the conceptual level.[1] The importance of political research findings for the implementation of values and policy goals has received much less attention.[2]

Four questions still on the substantive and methodological frontier of socialization research are as follow: 1) What is the relative influence of socialization agents, 2) are their effects "truncated," 3) does their influence vary cross-culturally, and 4) can these cross-cultural differences be explained within a developmental context. It is to these four questions that this paper is directed.

I

INTRODUCTION

Relative Influence

The political socialization literature has generally viewed political learning from the perspective of the agent while the role of the learner is minimized. Scores of different agencies have been scrutinized as to their possible place in the socialization process. This research, however, has confined itself essentially to single agency analysis.

The earlier literature normally focused on some aspect of family socialization and often made inferential leaps regarding the prime influence of this institution. The conclusion was based usually on the assumed political importance of affective ties between parent and child, and processes of imitation and identification during the early formative years.

More contemporary literature has taken a closer and more critical look at the political role of the family and has begun to investigate other agencies as well.[3] In the main, however, political socialization research has confined itself to examining one agency at a time. It has avoided by and large the larger empirical question of the relative importance of these agents.[4] In those rare cases where data from different agencies have been collected, their impact normally is compared by reviewing uncontrolled contingency tables or zero order correlations for each agent. This permits only the grossest comparisons and overlooks the problem of independent effect. Yet attempts to map the political development of individuals must inevitably become involved with assessing the relative contribution of different social institutions throughout the life cycle.

Truncated Effect of Agents

Another problem given little attention which may prove fundamental to our eventual understanding of the socialization process is that of truncated effect. If we examine in the United States the correlation between children's participation in family decision making and their development of a sense of political efficacy the gamma correlation might be, for example, on the order of .26, while encouraging student participation and discussion in the school correlates at the .18 level with efficacy. How do we interpret these two correlations? First, family is somewhat more influential than the school but both correlations are relatively low. In fact, correlations of this magnitude are more often used as a case against significant linkages. What happens, however, if the relation between the particular agent and the dependent variable is not linear, that is, the effect is truncated? In other words, family may be particularly important in moving children from low-to-medium efficacy but reaches the zenith of its influence at this level and it belongs to secondary agencies such as the school to move the child into the higher reaches of political confidence. Conversely, the broader school environment may be most effective in the low-to-medium range, while only the face-to-face milieu in the family, peer and work group is effective in moving people from medium-to-high efficacy. Certainly one consequence of these truncated effects would be the lack of linear relationships and depressed correlation coefficients. Yet we have no reason to believe at this point in our research that truncated relations are not descriptive of the actual connection between selected socialization agencies and many politically relevant dependent variables.

Cross-cultural Perspective and Development

The impact of a socialization agent will be influenced by its political and cultural milieu. American and English families contribute significantly to the development of partisan attachments while the French family is less important in this respect.[5] The formal school environment is not impressive in the development and change of political orientations in the United States yet scholars stress the part that formal curriculum may play in less industrialized countries.[6]

In order to minimize culture-specific generalizations we shall use data from several countries. This still leaves the final problem of explaining differences across nations. As the relative influence of an agent is likely to vary with the level of national economic and social development, we will offer a developmental model to explain our cross-cultural findings.

To summarize, our task is to examine within a single model the relative influence of family, school, and work group participation on the development of different levels of political efficacy across several nations within a developmental context.

II

STUDY DESIGN AND THE PRIMARY VARIABLES

The proposed analysis requires individual data across nations at different levels of development. Such data hopefully will be forthcoming from a comparative socialization study on which the senior author has embarked. For the present, however, preliminary analysis and partial test of hypotheses can be made on the survey data available from the five nation study by Gabriel Almond and Sidney Verba.[7]*

There is considerable literature on political efficacy which has been reviewed elsewhere.[8] In the United States, Great Britain, Germany, Italy, and Mexico, six items expressing the respondents sense of confidence in influencing local and national political affairs formed an acceptable Guttman type scale in each country (see Appendix A for scale construction and items).

The perception that one can act and influence governmental affairs has been found to be an important predictor of political participation. Three questions formed a political participation scale in each country. Discussing politics and attempting to influence governmental decisions at the local and national level are related to political efficacy in each country (Table 1).

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*Data card decks or tapes may be obtained by consortia members from the inter-university consortium for political research Institute for Social Research, University of Michigan

TABLE 1

GAMMA CORRELATION BETWEEN POLITICAL EFFICACY AND POLITICAL PARTICIPATION IN EACH COUNTRY

United States	.46
United Kingdom	.38
Germany	.56
Italy	.32
Mexico	.39

Once the link between a sense of efficacy and political participation has been established in each country,[9] the next question is what are the socialization patterns which distinguish the least efficacious from the most?

Among the myriad factors which may be associated with the development of efficacy, we focus on authority patterns within the family, school, and job. The expectation is that an individual who perceives himself participating in decisions or somehow exerting influence within the authority structure of these groups and institutions is more likely to generalize this efficacious role and the acquired skills to the political arena. Three different Guttman scales were constructed which measured the respondents perceived freedom to participate in and influence the authority structure in the family, school, and work group (Appendix A).

Causal Models and Dependence Relations

The use of a family of techniques loosely called "causal modeling" or "causal inference" has increased greatly over the past few years. If scholarly attention has thereby been directed to the analysis of causal relations instead of regularities, empirical political analysis has progressed. To the extent that Hubert Blalock is responsible for this popularization, the discipline is indebted to him.[10] However, the mode of analysis which has emerged from the Blalock tradition represents only one of two approaches to causal analysis. The question which separates these two modes of inquiry is: Should mathematical techniques be used to discover causal relations or to estimate the strength of causal linkages in an a priori structure of causal relations? The first approach inspired by Blalock is more common in political science and sociology which have seized on this form of causal modeling as a handy tool for distinguishing between competing models. An unfortunate consequence of this form of analysis has been the tendency to treat related models as separate, rather than members of the same family.[11]

The second approach is more common in economics and genetics, perhaps because their more advanced theoretical infra-structures reduce the scope of relevant empirical questions. Since the basic causal structures are more readily accepted, analysts, like Sewall Wright, have focused their attention on the estimation of the strength of the causal linkages instead of either their existence or direction.[12] The present analysis of political socialization also generally assumes the direction of causal relations and attempts to estimate the relative influence of several agencies across five countries. Therefore, we shall refer to the analysis of "dependence relations" rather than "causal models."

Throughout the subsequent discussion of modeling, we only use models with one way arrows. In almost all cases the direction of these arrows will be justified on _a priori_ grounds, in that these agents have their primary impact at different stages in the life cycle. However, the arrow leading from political efficacy to political participation raises some questions. Could not political participation actually increase subjective confidence as arguments of the Office of Econmic Opportunity suggest? The dependence relation might be mutual, that is, are there two arrows in opposite directions? The technique which we ultimately use does not offer answers to these two questions, hence we must depend upon other evidence to provide a partial answer. First, it seems intuitively reasonable that efficacy precedes political participation as we have defined it for the national populations. Secondly, using path coefficient models, we considered the two arrows individually as alternative models. The models which had the arrow going from political efficacy to political participation fit the data somewhat better than the alternative models. Thirdly, we tried to test the alternative models together; we constructed a single model which contained reciprocal arrows. Using the technique of instrumental variables[13] to estimate the two path coefficients for those models in which the technique was usable, we found no support for a significant feedback linkage from political participation to subjective competence.

An adequate understanding of the analysis of dependence relations begins with understanding the interplay between models and empirical data at various levels of measurement. Figure 1 contains three models which have been derived from Daniel Lerner's model of the political development process which links urbanization, literacy, media participation, and political participation.[14] Although these models have been utilized in several analyses, we are concerned with the models on grounds which are heuristically different, different in level of measurement and different in the unit of analysis. We shall not discuss the merits of any particular work. Rather than nations, we shall assume that the relevant unit of analysis is the individual. We shall not assume interval scale measurement, but treat the variables as dichotomous.

As an initial step, let us distinguish two concepts: logically possible cases and causally possible cases.[15] Logically possible cases are all combinations of the two states of the four variables which are not precluded because of logical incompatibility. In this example all sixteen possible combinations are listed in the first column of Figure 2. Causally possible cases are defined as logically possible cases which are also possible under some conception of

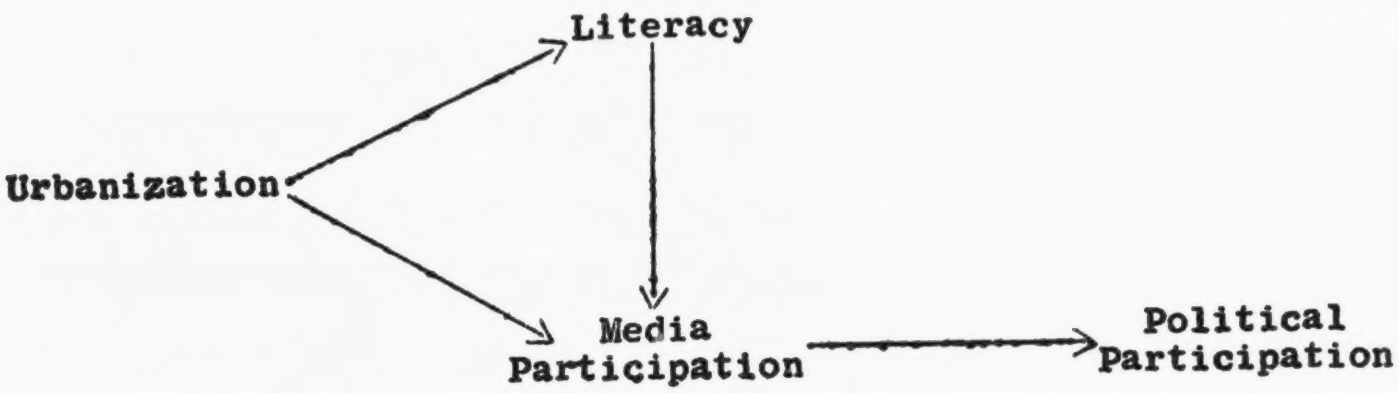
FIGURE 1

DEVELOPMENT MODELS

Model I

Urbanization ——> Literacy ——> Media Participation ——> Political Participation

Model II


Literacy
Urbanization
Media Participation
Political Participation

Model III

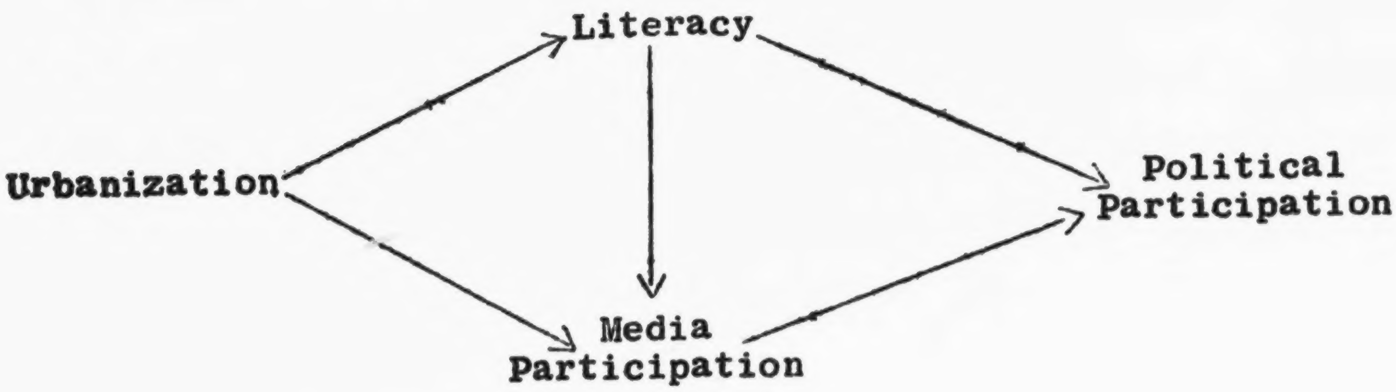

Literacy
Urbanization
Political Participation
Media Participation

FIGURE 2

LOGIC, CAUSALITY, AND DEVELOPMENT

Logical Possible Cases	Causally Possible Cases		
	Model I	Model II	Model III
$ULMP$	$ULMP$	$ULMP$	$ULMP$
$ULM\bar{P}$*	$ULM\bar{P}$	$ULM\bar{P}$	$ULM\bar{P}$
$UL\bar{M}P$			$UL\bar{M}P$
$UL\bar{M}\bar{P}$	$UL\bar{M}\bar{P}$	$UL\bar{M}\bar{P}$	$UL\bar{M}\bar{P}$
$U\bar{L}MP$		$U\bar{L}MP$	$U\bar{L}MP$
$U\bar{L}M\bar{P}$		$U\bar{L}M\bar{P}$	$U\bar{L}M\bar{P}$
$U\bar{L}\bar{M}P$			
$U\bar{L}\bar{M}\bar{P}$	$U\bar{L}\bar{M}\bar{P}$	$U\bar{L}\bar{M}\bar{P}$	$U\bar{L}\bar{M}\bar{P}$
$\bar{U}LMP$			
$\bar{U}LM\bar{P}$			
$\bar{U}L\bar{M}P$			
$\bar{U}L\bar{M}\bar{P}$			
$\bar{U}\bar{L}MP$			
$\bar{U}\bar{L}M\bar{P}$			
$\bar{U}\bar{L}\bar{M}P$			
$\bar{U}\bar{L}\bar{M}\bar{P}$	$\bar{U}\bar{L}\bar{M}\bar{P}$	$\bar{U}\bar{L}\bar{M}\bar{P}$	$\bar{U}\bar{L}\bar{M}\bar{P}$

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*The lower state of a variable is symbolized by a bar over the letter representing the variable.

reality. For instance, Model I (Figures 1 and 2) apparently assumes that the higher state of each variable is causally necessary for the presence of the higher state of each succeeding variable. In other words, unless an individual has internalized "urban" attitudes, an attitudinal not spatial property, he will not become literate. Unless an individual is literate, he will not utilize the mass media, etc. Given this conception of reality, there are only five causally possible cases, those in the second column if Figure 2. In Models II and III (Figures 1 and 2) it is not necessary for a person to be literate to be politically active. Notice also, that in Model III the paths through literacy and media participation offer alternative paths connecting urbanization and political participation. Blalock's approach would treat all of the logically possible cases as equally probable and discriminate between the alternative models on the basis of empirical frequencies. The second approach places the additional constraints of causal possibility upon the data analyst. In essence, the first lets the data lead the analyst and the second allows the analyst to examine the data with reality constraints.

In summary, this brief exposition has illustrated two axioms underlying many analyses of dependence relations and causal modeling. The first involves the multiplicative nature of particular paths. In the first model, if any intervening variable were absent, or in its lower state, political participation remains low. In the second model, the absence of media participation has the same effect. But consider the role of literacy in Model III. It is possible for urbanization to affect political activity in the absence of media usage. This brings us to our second axiom: the _additive_ nature of alternative paths. Alternative paths may conduct influence independently of each other. That is, political participation can be effected both through literacy and media links. However, one link (or model) may be more plausible than the other.

So far, the models and cases are ideal types, but, as any survey analyst knows, the real world is not this simple. We expect that, if our models are valid representations of the world, the vast bulk of actual cases should fall into those cases denoted "causally possible." Deviant cases are the result of two types of errors, either measurement errors or, more significantly, influence paths involving variables which have not been included in the model. The first source of error is to a degree outside the analyst's control. The second raises an interesting question about what are called extraneous or _error variables_. The term "error" refers to not being included rather than a measurement inaccuracy. Should the error variables be included in the model? The question cannot be answered in general terms. Only after assessing the significance of the error variables and the purpose of the analysis can it be answered.

One common expression of the influence of one variable on another is the correlation coefficient, for simplicity, the Pearsonian product moment correlation (r). Regarding the effect of error variables, consider the following consequences of the additive and multiplicative axioms discussed earlier. Let us attach a token "p" as the expression of association to each arrow in any model we consider, and then use the convention that a two letter subscript will be attached to each "p". The first represents the variable at the head of the arrow and, the second, the variable at the tail of the arrow. "p_{yx}" is the direct influence or causal impact of X on Y. In the case of the first arrow in Model I (Figure 1), since r_{lu} summarizes the influence of "Urbanization" on "Literacy," p_{lu} must be equal to r_{ul} (see Figure 3). Likewise, in the case of the first two arrows in the same model, p_{lu} is r_{lu} and p_{ml} is r_{ml} by analogy. By definition, since no direct path connects "Media Participation" and "Urbanization," p_{mu} must be zero or, equivalently, nonexistent. The multiplicative axiom suggests that, if either p_{lu} or p_{ml} should be zero, the correlation between "Media Participation" and "Urbanization" must be zero. The only way this can actually occur is if

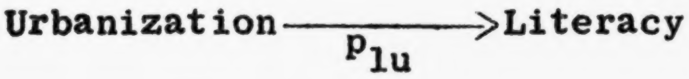
$$r_{mu} = p_{lu}p_{ml} .$$

This condition is also sufficient to say that the partial correlation between "Media Participation" and "Urbanization" is zero if literacy is controlled. In summary, the

FIGURE 3

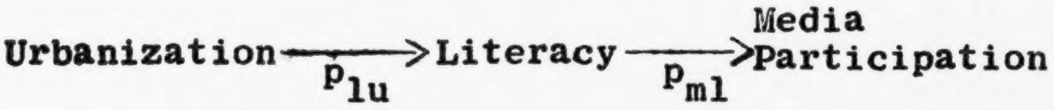
MULTIPLICATIVE AND ADDITIVE RELATIONS

Model I


Urbanization
p_{lu}
Literacy

$p_{lu} = r_{lu}$

Model II


Urbanization
p_{lu}
Literacy
p_{ml}
Media Participation

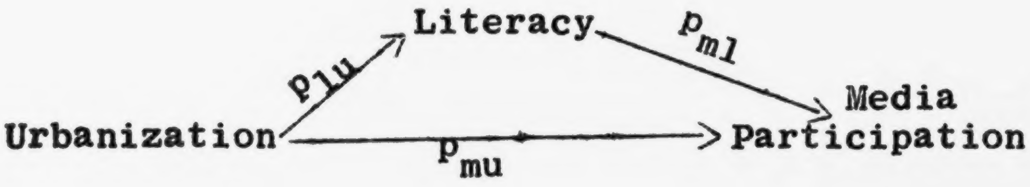
$p_{lu} = r_{lu}$

$p_{ml} = r_{ml}$

$p_{mu} = 0$

$r_{mu} = p_{lu}p_{ml}$

Model III


Literacy
p_{lu}
p_{ml}
Urbanization
p_{mu}
Media Participation

$r_{lu} = p_{lu}$

$r_{mu} = p_{mu}+p_{lu}p_{ml}$

$r_{ml} = p_{ml}+p_{lu}p_{mu}$

contribution of any compound path between two variables is the product of the p's, path coefficients, attached to the arrows making up the path.

In the third model in Figure 3, the reader should now see that $p_{lu} = r_{lu}$. Our axiom regarding the additivity of paths suggests the solution to the partition of the other two correlations. The independent paths act independently. Thus there are two paths connecting "Urbanization" and "Media Participation." The direct one contributes p_{mu}. The path through "Literacy" contributes, because of the multiplicative axiom, $p_{lu}p_{ml}$. Hence,

$$r_{mu} = p_{mu} + p_{lu}p_{ml} \ .$$

The correlation between "Literacy" and "Media Participation" provides a slight complication, both "Literacy" and "Media Participation" are dependent on "Urbanization." Given this common source of influence, the classic definition of a spurious relation, the product of p_{lu} and p_{mu} also serves as a path connecting "Literacy" and "Media Participation." Consider again how the error variables resulted in deviant cases. Thus,

$$r_{lm} = p_{ml} + p_{lu}p_{mu} \ .$$

With some additional restrictions on paths in more complicated models and the assumption of no error variables or insignificant error variables, the reader has sufficient background to adapt Sewall Wright's path coefficient approach to causal modeling. Since we began with product moment correlations, the p's are actually standardized regression coefficients.

The use of correlation coefficients requires two assumptions concerning the data in addition to the normal distribution assumption. First, the computation requires that the data be measured on an interval scale. Secondly, the computation requires that the independent and dependent variables be linearly related. These assumptions are intimately related in that any non-linear relation automatically assumes that the effects on the dependent variable of two equal intervals of the independent variable are unequal. That is, the scale of the independent variable is not really an interval scale. Logarithmic transformations actually distort the scale in such a way as to make it, in effect, interval. We chose not to use path coefficients based on correlation coefficients, because we felt that the non-linearity of the dependence relations, especially considering we used categorical data, was substantively significant and should be retained if possible. In other words, we wanted to illuminate rather than mask the possible truncated influence of the socialization agents. No simple transformation would yield the same results.

Linearity or non-linearity was the single most important choice in our mode of analysis. Since we discovered the non-linearity of dependence relations from contingency tables, perhaps it would be useful to illustrate the phenomenon.

Linearity, per se, refers to the relation between two variables, although the basic conception can be extended into higher dimension spaces. Taking the variables: participation in family decisions, the independent variable, and political efficacy, the dependent variable, Figure 4a depicts a linear relation. The straight line, which may be considered a mean for simplicity, shows that a single value of family participation is associated with a single value of efficacy. As we increase family participation, political efficacy constantly increases by a fixed increment, i.e., if $\underline{y}$ represents efficacy and $\underline{x}$ represents family participation, $y = a + bx$, where $\underline{b}$ is the fixed increment and $\underline{a}$ simply shows where the straight line intersects the vertical axis. Next we trichotomize family participation and assume that the effective distances between low and medium, and medium and high, are equal (as in Figure 4b). Using the earlier conventions for x and y, and denoting this equal distance as $\Delta X = x_2 - x_1 = x_1 - x_0$ consider the following result on political confidence if the observed means fall on the line $y = a + bx$.

$$y_0 = a + bx_0$$

$$y_1 = a + bx_1$$

$$y_2 = a + bx_2$$

Therefore,

$$y_1 - y_0 = b(x_1 - x_0)$$

$$y_2 - y_1 = b(x_2 - x_1)$$

FIGURE 4

LINEARITY, NON-LINEARITY

Figure 4a

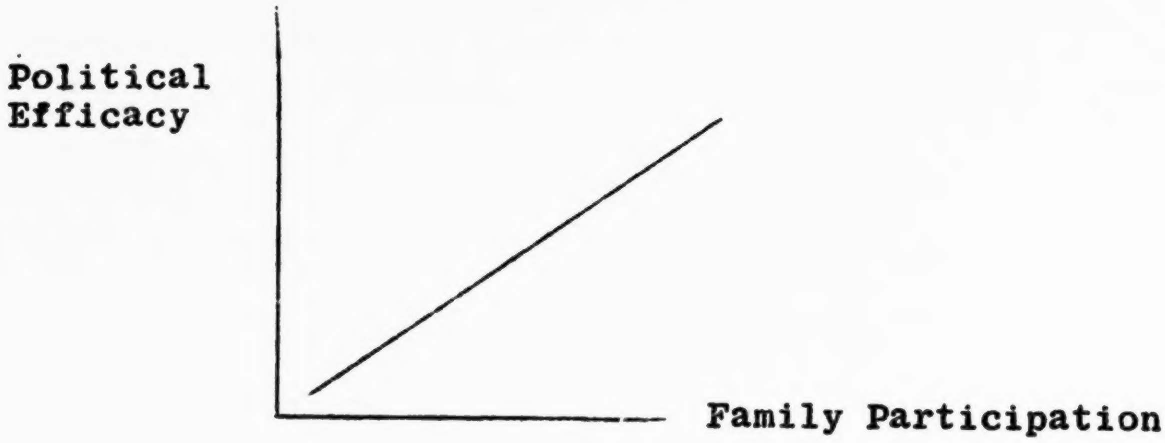


Figure 4b

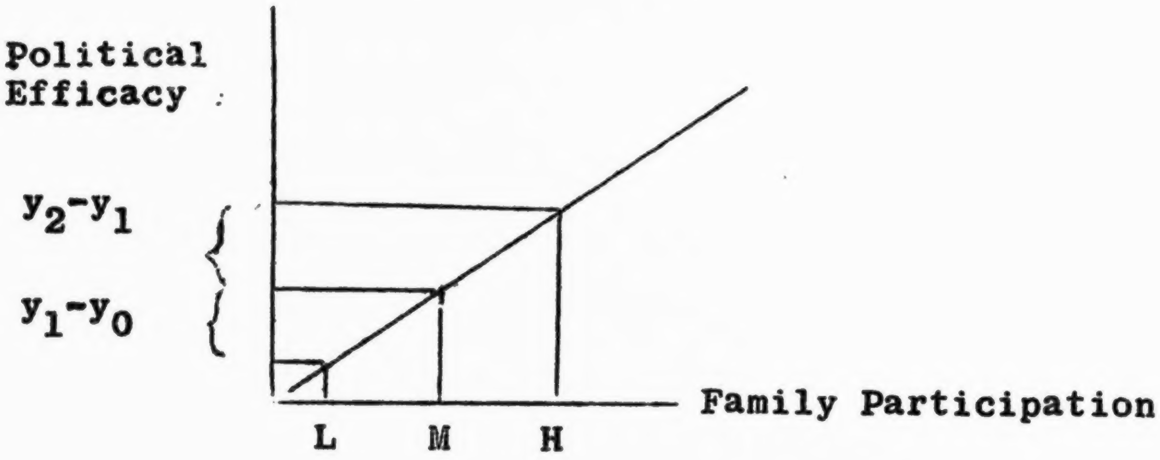
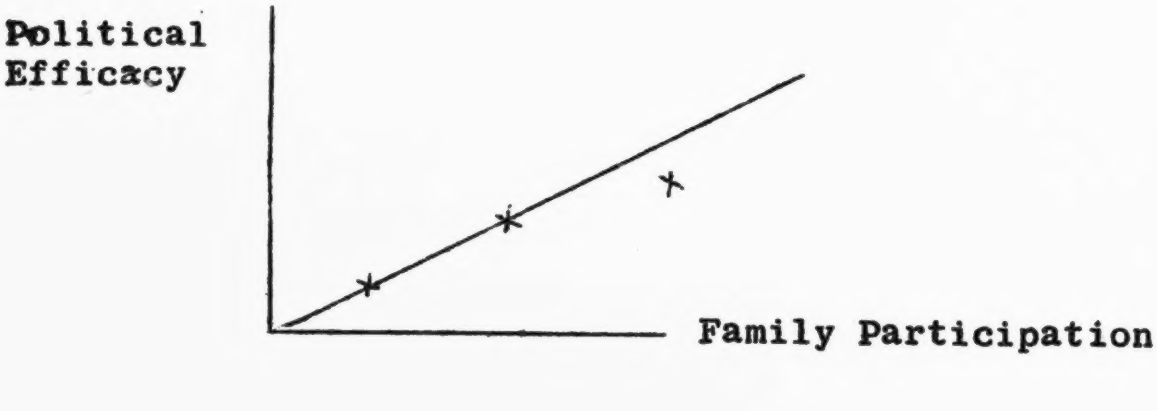


Figure 4c



Or,

$$y_1 - y_0 = b\Delta x$$

$$y_2 - y_1 = b\Delta x$$

and thus, $y_2 - y_1 = y_1 - y_0$. That is, the change in efficacy associated with a change in family participation is the same whether the change is from low to medium or medium to high.

On the other hand, Figure 4c shows a non-linear relation where the third mean does not lie on or near the straight line. Substantively, such a non-linear relation shows that a change in family participation is most important in the range from low to medium. For the development planner, the small additional change in political efficacy may not be worth the added investment in the family if some other agent such as job participation is more effective at the higher level. Extended to contingency tables which are percentaged within categories of the independent variable, linear relations are characterized by equal increases in the percentage falling in the cells representing high values for the dependent variable as is illustrated in Table 2a. Note that the percentages increase by 30 percent for each category of family participation, while in the non-linear case (Table 2b), the percentage jumps are 50 percent and 10 percent.

Additivity is a concept which is related to linearity, in fact they are often confused, but it is independent of linearity and requires at least two independent variables rather than one. Additivity requires that the effect on the

TABLE 2

RELATION BETWEEN PARTICIPATION AND POLITICAL EFFICACY, AN EXAMPLE

Political Efficacy

A.

Family Participation	Low	High
Low	90%	10%
Medium	60	40
High	30	70

B.

Family Participation	Low	High
Low	90%	10%
Medium	40	60
High	30	70

C.

Participation School	Family	Low	High
Low	Low	90%	10%
Low	Medium	70	30
Low	High	40	60
High	Low	80	20
High	Medium	60	40
High	High	30	70

D.

Participation School	Family	Low	High
Low	Low	90%	10%
Low	Medium	80	20
Low	High	70	30
High	Low	60	40
High	Medium	30	70
High	High	10	90

dependent variable of changing the level of an independent variable is independent of any effects of the other independent variable. In Table 2c, we find an additive relation among school participation, family participation and political confidence. Regardless of the level of school participation, the change in political efficacy associated with a change in the level of family activity is the same. This is true also for school participation and efficacy. Thus, the relations are additive.* Conversely, the condition does not hold for Table 2d which represents an interactive relationship, that is, the effect of changing the level of family participation depends upon the level of school participation. Parenthetically, we did not discover any significant deviations from the additive model in our data.

We [illegible] adapted a technique first described by James Coleman to estimate the size of dependence relation coefficients in our model of the socialization process.[16] To simplify the explanation of this technique, we shall first assume that we are dealing with dichotomous variables and then treat the additional complexity of trichotomous variables, both independent and dependent.

Consider the joint distribution of the two variables family participation and political efficacy, independent and dependent respectively, in the contingency table in Figure 5a, where the p's are percentages summing within the respective columns to 100 percent. As in our discussion of causally possible cases, in the ideal case of a perfect causal relationship, the off diagonal cells should be empty. Unfortunately, the real world puts data into these cells. These data represent, in effect, the result of error variables in our earlier sense, that is, variables not included in the model under consideration. Let us call the forces or variables tending to fill the two off diagonal cells random shocks. One random shock shocks upward, i.e., from low to high efficacy, and the other provides a downward impulse. The two cells on the principal diagonal reflect the dependence of political efficacy on family participation. The dependence is assumed to operate in both directions. That is, the absence of family participation is assumed to provide the same downward effect as the presence provides upward effect. Thus, if the random shocks upward are called E_1 and downward are called E_2, and, if we denote the lower state by a bar, e.g., $\bar{f}$ for low family participation, the force upward in the case of low family participation is E_1. The force downward is $E_2 + a_f$, where a_f is the two way effect of family participation. The model underlying the analysis is additive as the statement of this force indicates. Similarly, the force upward in the presence of family participation is $E_1 + a_f$ and the force downward is E_2. These relations are summarized pictorially in Figure 5b.

---

*Note that, while the relation between school participation and efficacy is linear, the relation between family participation and efficacy is non-linear.

FIGURE 5

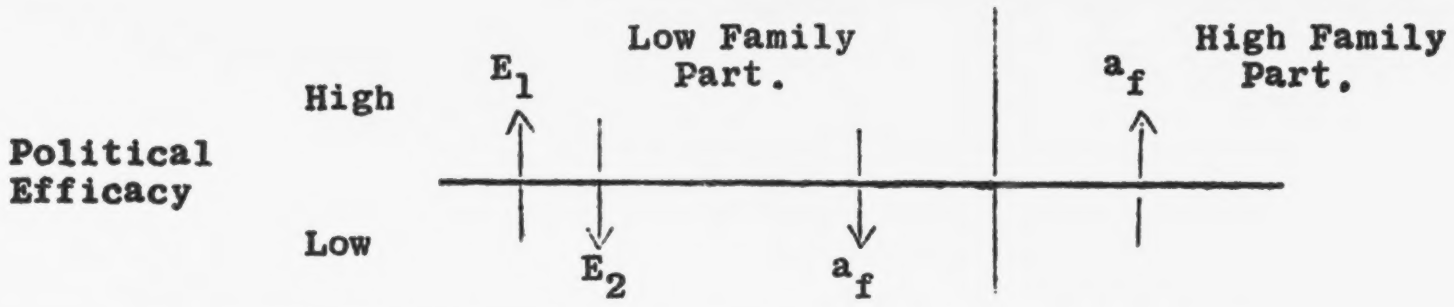
DEPENDENCY RELATIONS, DICHOTOMOUS CASE

Figure 5a

Family Participation

Political Efficacy		Low	Hign
	Low	p11	p12
	High	p21	p22
		p11+p21= 100%	p12+p22= 100%

Figure 5b


Political Efficacy
High
Low
Low Family Part.
High Family Part.
E_1
E_2
a_f
a_f

Low Family Participation

Force Upward = E_1

Force Downward = $E_2 + a_f$

High Family Participation

Force Upward = $E_1 + a_f$

Force Downward = E_2

$$PE_{\bar{f}} = E_1$$
$$PE_f = E_1 + a_f$$
$$\overline{PE}_{\bar{f}} = E_2 + a_f$$
$$\overline{PE}_f = E_2$$

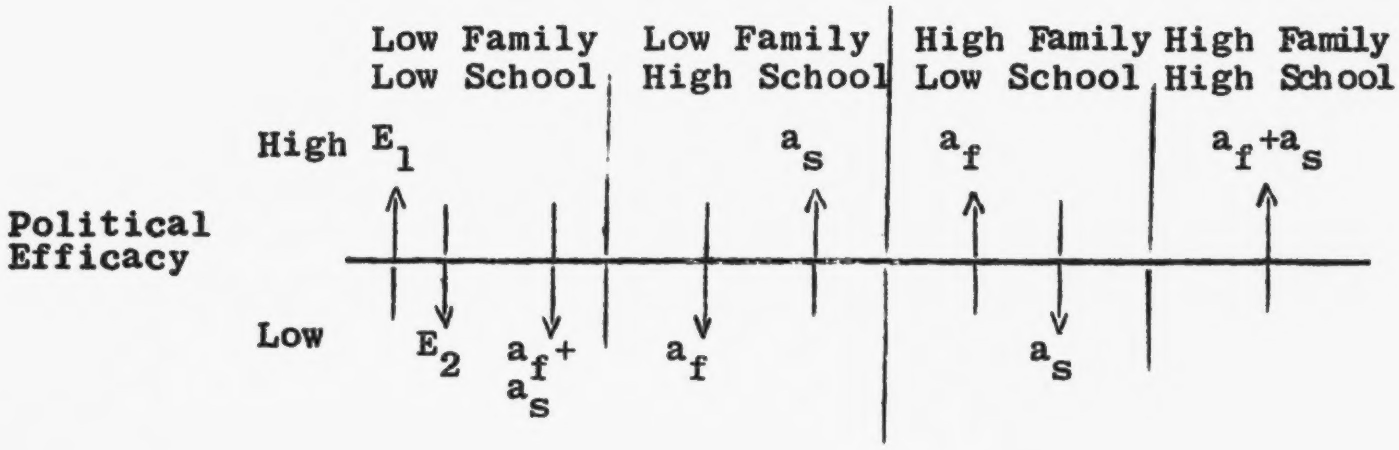
The reader should note carefully that we are no longer using individuals as our unit of analysis. The unit of analysis is now a cell entry which is a percentage. This procedure appears similar to that used in dummy variable regression, but there are two important differences: a) dummy variable regression uses individuals as the unit of analysis, and b) dummy variable regression assumes an interval scale dependent variable.

Another assumption is that the system of causal effects is at instantaneous equilibrium. This assumption is not necessary to the procedure, but if the system is not at equilibrium, then the deviation from the state must be specified. There is an equilibrium when the number of individuals moving from high efficacy to low efficacy due to random shock is equal to those moving from low to high. For simplicity, and in accordance with standard causal modeling assumptions, we shall assume equilibrium throughout our discussion.

Given the bivariate, dichotomous case in Figure 5, it appears that the dependence of a sense of competence on family participation is the difference between the percentage who are efficacious and participate and the percentage who are efficacious without family participation. The latter results from random shock upward, E_1. Figure 6 depicts the situation when there are two independent variables, family participation and school participation. Given the perversity

FIGURE 6

DEPENDENCY ANALYSIS, TWO INDEPENDENT VARIABLES


Low Family Low School
Low Family High School
High Family Low School
High Family High School
High
Low
Political Efficacy
E_1
E_2
$a_f + a_s$
a_f
a_s
a_f
a_s
$a_f + a_s$

$PE_{\bar{f}\bar{s}} = E_1$

$PE_{\bar{f}s} = E_1 + a_s$

$PE_{f\bar{s}} = E_1 + a_f$

$PE_{fs} = E_1 + a_f + a_s$

$\overline{PE}_{\bar{f}\bar{s}} = E_2 + a_f + a_s$

$\overline{PE}_{\bar{f}s} = E_2 + a_f$

$\overline{PE}_{f\bar{s}} = E_2 + a_s$

$\overline{PE}_{fs} = E_2$

of nature, we may not get consistent estimates of the various a's and E's from the equations in Figure 6. One way of confronting this situation is to obtain a best estimate by some technique such as the method of least squares. The possibly unexpected results of this mathematical technique, remembering that all quantities are percentages,[17] are:

$$a_s = \tfrac{1}{2}\left\{ (PE_{\bar{f}s} - PE_{\bar{f}\bar{s}}) + (PE_{fs} - PE_{f\bar{s}}) \right\}$$

$$a_f = \tfrac{1}{2}\left\{ (PE_{f\bar{s}} - PE_{\bar{f}\bar{s}}) + (PE_{fs} - PE_{\bar{f}s}) \right\}$$

$$E_1 = \tfrac{1}{4}\left\{ 3PE_{\bar{f}\bar{s}} + PE_{\bar{f}s} + PE_{f\bar{s}} - PE_{fs} \right\}$$

$$E_2 = 1 - a_s - a_f - E_1 .$$

The effect of an independent variable is the average of the effects of the presence of that variable when the other variable is controlled. This is a perfectly straightforward generalization of the bivariate case and is the intuitively obvious way to approach an analysis of a contingency table. Intuition and mathematics have come to rest at the same water hole.

Trichotomous independent variables are handled with equal ease with the addition of a code for the third category, e.g., ff for high family. In general, the solution for any a is:

$$a_i = \frac{1}{k} \sum_j (D_{ij} - D_{\bar{i}j}) ,$$

where D represents the dependent variable, e.g., efficacy, i represents the level of the independent socialization agent under scrutiny, j is the level of another independent variable in the model being controlled and k is the number of comparisons or levels controlled. Unfortunately, the error terms or random shocks cannot be expressed in neat general terms.

Trichotomous dependent variables are also a fairly simple extension of the dichotomous case. This extension assumes that each category of independent variable has two effects on the dependent variable. For example, family participation will affect the percentages representing high political confidence, medium and low. We have assigned "a" to the effect on the change from low to medium, and "b" to the effect on the change from medium to high. Using the same conventions regarding controlled variables and symbols ($\overline{D}$ is low, D is medium, and DD high efficacy), the general solutions for a_i and b_i in the case of a trichotomous dependent variable are:

$$a_i = \frac{1}{k} \sum_j (\overline{D}_{\bar{i}j} - \overline{D}_{ij})$$

$$b_i = \frac{1}{k} \sum_j (DD_{ij} - DD_{\bar{i}j}) \ .$$

To demonstrate these general solutions in a concrete case, let us assume that family participation, school participation, and job participation, are all dichotomous independent variables and that political efficacy is a trichotomous dependent variable, $\overline{D}$, D, and DD. The set of equations representing the categoric comparisons is in Figure 7. Again the random shock term cannot be given generally, but in this particular case, the random shock from medium to high is:

$$E = \frac{1}{4} \left[2DD_{\bar{f}\bar{s}\bar{j}} + DD_{\bar{f}\bar{s}j} + DD_{\bar{f}s\bar{j}} + DD_{f\bar{s}\bar{j}} - DD_{fsj} \right]$$

FIGURE 7

DEPENDENCY ANALYSIS, TRICHOTOMOUS DEPENDENT VARIABLE

$$\begin{aligned} a_f = \tfrac{1}{4} \Big\{ & (\bar{D}_{\bar{f}\bar{s}\bar{j}} - \bar{D}_{f\bar{s}\bar{j}}) + (\bar{D}_{\bar{f}\bar{s}j} - \bar{D}_{f\bar{s}j}) + (\bar{D}_{\bar{f}s\bar{j}} - \bar{D}_{fs\bar{j}}) + \\ & (\bar{D}_{\bar{f}sj} - \bar{D}_{fsj}) \Big\} \end{aligned}$$

$$\begin{aligned} a_s = \tfrac{1}{4} \Big\{ & (\bar{D}_{\bar{f}\bar{s}\bar{j}} - \bar{D}_{fs\bar{j}}) + (\bar{D}_{f\bar{s}\bar{j}} - \bar{D}_{fs\bar{j}}) + (\bar{D}_{\bar{f}\bar{s}j} - \bar{D}_{\bar{f}sj}) + \\ & (\bar{D}_{f\bar{s}j} - \bar{D}_{fsj}) \Big\} \end{aligned}$$

$$\begin{aligned} a_j = \tfrac{1}{4} \Big\{ & (\bar{D}_{\bar{f}\bar{s}\bar{j}} - \bar{D}_{\bar{f}\bar{s}j}) + (\bar{D}_{f\bar{s}\bar{j}} - \bar{D}_{f\bar{s}j}) + (\bar{D}_{\bar{f}s\bar{j}} - \bar{D}_{\bar{f}sj}) + \\ & (\bar{D}_{fs\bar{j}} - \bar{D}_{fsj}) \Big\} \end{aligned}$$

$$\begin{aligned} b_f = \tfrac{1}{4} \Big\{ & (DD_{f\bar{s}\bar{j}} - DD_{\bar{f}\bar{s}\bar{j}}) + (DD_{fs\bar{j}} - DD_{\bar{f}s\bar{j}}) + (DD_{f\bar{s}j} - DD_{\bar{f}\bar{s}j}) + \\ & (DD_{fsj} - DD_{\bar{f}sj}) \Big\} \end{aligned}$$

$$\begin{aligned} b_s = \tfrac{1}{4} \Big\{ & (DD_{\bar{f}s\bar{j}} - DD_{\bar{f}\bar{s}\bar{j}}) + (DD_{fs\bar{j}} - DD_{f\bar{s}\bar{j}}) + (DD_{\bar{f}sj} - DD_{\bar{f}\bar{s}j}) + \\ & (DD_{fsj} - DD_{f\bar{s}j}) \Big\} \end{aligned}$$

$$\begin{aligned} b_j = \tfrac{1}{4} \Big\{ & (DD_{\bar{f}\bar{s}j} - DD_{\bar{f}\bar{s}\bar{j}}) + (DD_{f\bar{s}j} - DD_{f\bar{s}\bar{j}}) + (DD_{\bar{f}sj} - DD_{\bar{f}s\bar{j}}) + \\ & (DD_{fsj} - DD_{fs\bar{j}}) \Big\} \end{aligned}$$

During the analysis, two major problems arose which necessitated operational decisions of which the reader should be aware. First, as our discussion of linearity may have illustrated, we have assumed that increases in level of the independent variable are not associated with decreases in the level of efficacy. Thus, no dependence coefficient should be negative. In a very few cases, however, higher levels of the independent variables were associated with a distribution across political efficacy which violated the assumption. In other instances, the least squares method of estimation yielded negative coefficients. Therefore we faced the problem of interpreting negative coefficients in the light of our theoretical assumptions. If the negative value is truly a mathematical artifact, other coefficients should not change appreciably when the condition yielding the negative result is omitted, that is if a_s is negative, a_f, a_{ff}, a_j should not change much if a_s is removed as a relevant variable. When the computation yielded a negative coefficient, our procedure was to assume that the independent variable did not have a causal influence. However, all negative values were very close to zero, thus the other coefficients were not significantly altered by their removal.

We also faced another problem: how to treat coefficients based on small subsamples. The problem is not unique to this study and can be handled in at least two ways. First, categories could be collapsed until most cells contain enough cases for reasonably stable calculation of percentages. We did not follow this course because the original examination of the data indicated that there are subtle differences in the categories which would be masked if collapsed. Therefore, following a semi-Bayesian approach, the cell entries are weighted by a function of the size of the cell entry in such a way that the larger the entry the more confidence assigned to percentages based on that entry. The function must always be positive and asymptotically approach 1 as n becomes large. Specifically, we used the weighting factor $n/(n + 1)$, where n is the total number of persons with a given combination of independent categories. This technique allows us to preserve the fineness of the data without distorting the results of our analysis.

III

FINDINGS

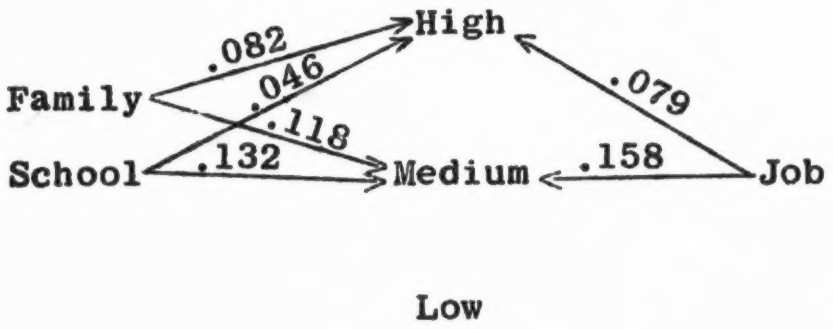
Figure 8 shows the relative effects of family, school, and work group participation upon the development of political efficacy in the five nations. An arrow in these figures identifies a relation between an agent and efficacy which is greater than zero. The number affixed to each arrow is the D coefficient. This is not a correlation coefficient. Rather the coefficient symbolizes the percentage of the sample that will have a given level of efficacy (medium or high) as a result of being subjected to a particular participation environment in one of the socialization agencies,

FIGURE 8

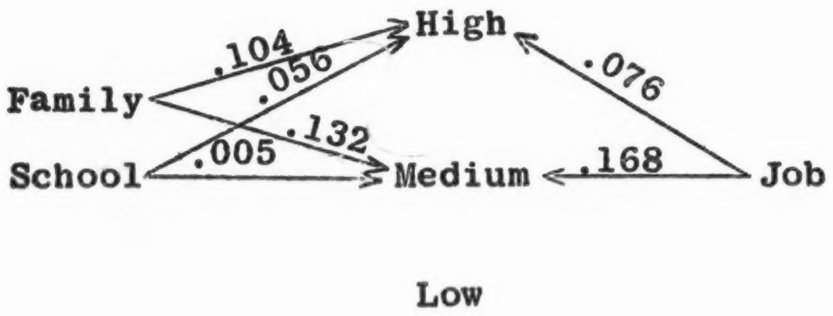
RELATION BETWEEN FAMILY, SCHOOL, AND WORK GROUP PARTICIPATION AND POLITICAL EFFICACY IN FIVE COUNTRIES

Political Efficacy

United States


High
.082
.046
.079
Family
.118
School
.132
Medium
.158
Job
Low

Great Britain


High
.104
.056
.076
Family
.132
School
.005
Medium
.168
Job
Low

Germany

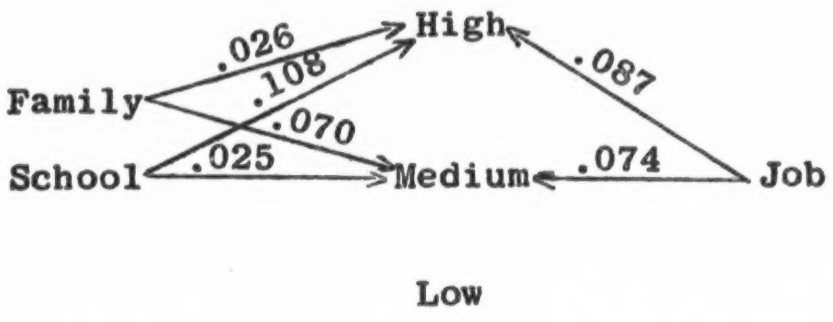
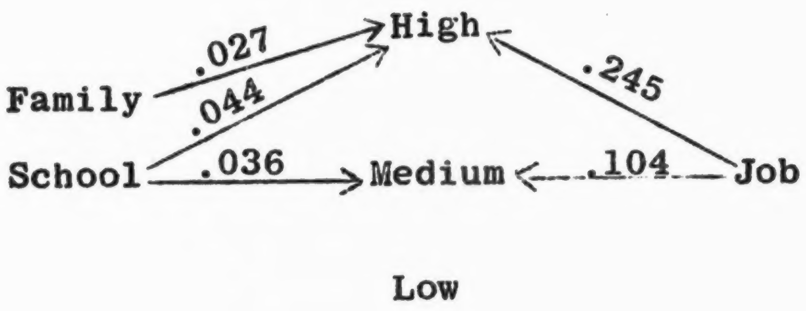
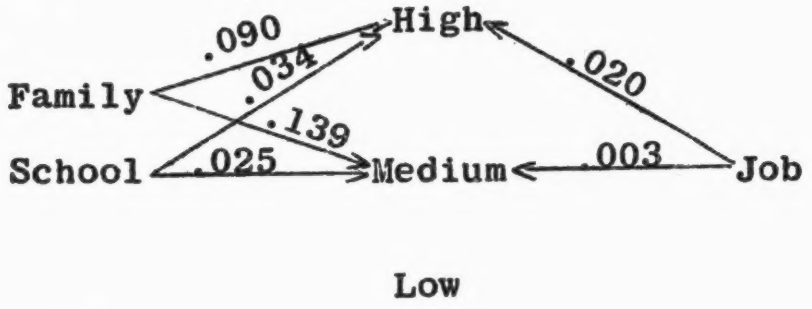

High
.026
.108
.087
Family
.070
School
.025
Medium
.074
Job
Low

Figure 8 continued

Italy


High
Family
School
Medium
Job
Low
.027
.044
.036
.245
.104

Mexico


High
Family
School
Medium
Job
Low
.090
.034
.139
.025
.020
.003

holding constant the effect of the other two agencies.[18] Therefore, a coefficient of .168 equals 16.8 percent and signifies in the case of Great Britain, for example, that exposure to a participatory job environment accounts for the placement of 16.8 percent of the sample in the medium efficacy range.[19] This coefficient is somewhat analogous to the result obtained from squaring a correlation coefficient to determine the percentage of variance explained.

A number of generalizations can be drawn from Figure 8. First, the relationships between the independent variables and efficacy are not linear. For example, job does not have equal impact at the medium and high efficacy levels. In Great Britain its major influence is in developing a medium (16.8%) rather than high (7.6%) sense of efficacy. Clearly, a mode of analysis based on the assumption of linear relations would have obscured important differences in the data. This differential effect would depress a standard product moment correlation to the point that the relationship as a whole might be ignored.

The total influence of the three agents at both efficacy levels is additive in each country (Table 3). They account for the placement of 29 percent[*] of the sample in the medium and high efficacy range in Germany and 61.5 percent in the United States, or 42 percent and 69 percent, respectively, of all respondents who are at the medium and high level in each country. This reflects the efficacy of a considerable portion of the two samples when you consider that we are only looking at one aspect of the socialization agent, and at no more than three agents.

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[*] One would have to square a standard multiple correlation coefficient of .54 to explain this amount of variance.

TABLE 3

TOTAL PERCENTAGE CHANGE IN POLITICAL EFFICACY RESULTING FROM EXPOSURE TO FAMILY, SCHOOL AND WORK GROUP PARTICIPATION

	%
United States	61.5
Great Britain	54.1
Italy	45.6
Mexico	31.1
Germany	29.0

Relative Effects

When it is possible to examine the effect of one of three agents within a single model while holding constant the influence of the other two, certain conclusions can be drawn as to relative outcomes. If direction was the only criteria, the findings would appear to support earlier generalizations made elsewhere regarding the relative influence of these agents.[20] In four of the five countries job participation has the greatest absolute impact on political efficacy. However, the magnitude of the difference which separates job influence from that of the next most important agent paints a different picture. In Great Britain and the United States, for example, the magnitude of the differences which separate family and job influence are trivial (1% and 4%, respectively). In Mexico, family clearly out distances job.

Comparing the influence of the agents at different levels of the dependent variable reveals faint patterns across the five nations. Job is slightly more important than family in moving people from low to medium efficacy, followed at some distance by the impact of school.[21] At this level, job participation is marginally more influential in the United States, Great Britain, and Italy, equaled by family influence in Germany, while the family is clearly dominant in Mexico. The pattern is also uneven at the high efficacy level. The family is somewhat more effective than the job (three of five countries), again followed by the school.

To summarize, the face-to-face group environment of the family and job are more influential in developing a sense of efficacy than the broader, less intimate school milieu,[22] the job being slightly more effective at the lower range and the family at the higher. One should be cautious, however, in standing too firmly on these generalizations given the magnitude of the differences and their cross-national variations. It is to a closer examination of these national differences that we now turn.

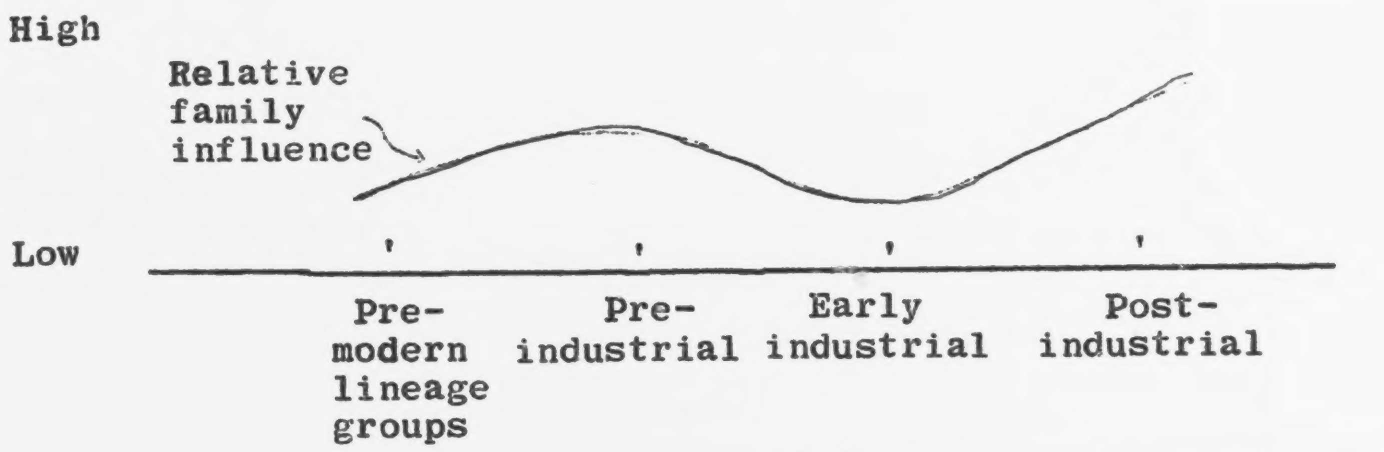
Relative Influence and Development

Summing the total effect of each agent on both levels of efficacy and comparing the agents relative influence across nations underscores the necessity for comparative research. The rank order placement of an agent's influence in one country does not assure that the pattern will be repeated in another. Comparative analysis reduces the tendency toward parochial conclusions regarding relative influence, but it also raises the question of unexplained differences.

It is our contention that these differences can be more readily understood if placed within a development context. That is, one might expect the influence of the family to change as societies move from pre-industrial to early industrial to post-industrial levels of development (Figure 9).[23]

FIGURE 9

RELATIVE FAMILY INFLUENCE AND ECONOMIC DEVELOPMENT



During the pre-industrial phase the family unit begins to distinguish itself from the lineage group and take its short-extended or nuclear form. Institutionally separate schooling is likely to be non-existent or if it does exist it is only at the primary level which tends to be less culturally distinct from the family than secondary education.[24] Employment is also pre-modern in that new conceptions of work relations, participation, etc., have not yet penetrated the culture. Under these conditions the influence of the family may be relatively greater than the job or school.

As the country contines to develop socially and economically, a number of important changes occur. First, educational opportunities are expanded. This is particularly important at the secondary level. In many countries the child often has to leave home to attend secondary school, thus begins the weakening of family ties. More important, he is now being introduced to new norms, aspirations and symbols which increasingly distinguish the culture of the school from that of the family.[25] The impact of this less redundant educational process is likely to compete with the earlier dominance of the family.[26] Second, industrialization means opportunities for modern employment and the penetration of society by new norms regarding work relations and participation. Under these conditions the job as well as the school now competes more effectively with what earlier may have been the almost exclusive socialization domain of the family.

In later stages of development the ranks of the educated continue to expand and now include new generations of parents as well as their children. Mass communication exposes everyone to an increasingly universal culture, while schooling becomes more redundant and family and job influence in the political socialization process reaches greater parity.

The above conceptual framework is admittedly abbreviated. Yet as we return to the data it may help explain changes in the relative influence of agents as we move from the least to the most developed countries.

On any number of indicators of economic and social development—percent of labor force in service occupations, per capita gross national product, media participation—Mexico is the least developed, United States and Great Britain the most developed, and Germany[27] and Italy usually somewhere in between (Appendix B).

A summation of each socialization agent's absolute total impact on political efficacy reveals the following patterns.

Relative Influence of Family, School, and Job Participation on Political Efficacy by Country

Job(48)>Family(44)>School(24)*	United States, Great Britain
Job(51)>School(21)>Family(12)*	Germany, Italy
Family(23)>School(3)>Job(2)	Mexico

*Numbers in parenthesis equal the sum of the agent's effect in both countries, i.e., relative difference within developmental levels are important here rather than absolute differences across levels.

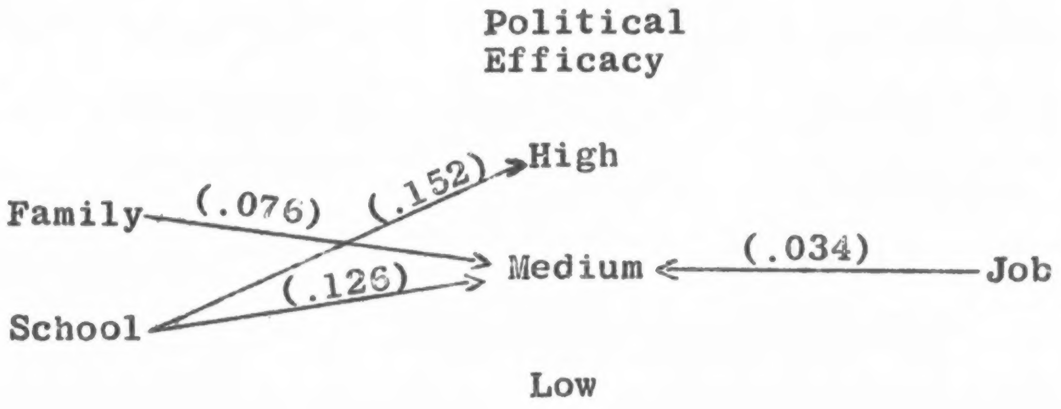
In Mexico, the least developed country, the family dominates the socialization process followed at considerable distance by the school and job. The family's primacy is displaced by the enlarged roles of the job and school in Germany and Italy, the two countries in the middle ranks of the development scale. The family re-asserts itself in the political socialization process of Great Britain and the United States, displacing the increasingly redundant school, and almost reaching a parity with job influence.

Students of development may find Mexico the more interesting case. It is more industrialized than many of the less developed countries, yet it still has many of their classic characteristics. Although primary education has been expanded, with a few notable exceptions the facilities are inadequate, teachers poorly trained, and the students little touched by values and perspectives that differ significantly from that of their family.[28] There are also fewer opportunities for culturally differentiated modern employment in Mexico than in the other four countries.[29] Thus conditions present less challenge to the pre-emminance of the family in the socialization process. Family participation alone accounts for the placement of 29 percent of those at the medium and high efficacy levels—almost three times the result of school (8%) and job (2%) combined. The continued expansion of the modern industrial sector and increased opportunities for secondary education may ultimately change the relative influence of the three agents in Mexico. At present, however, only about 12 percent of the school-age population is enrolled in academic secondary schools which introduce the student to a culture most likely to be different from that of the family.[30]

It is possible to examine more closely the influence of secondary education in Mexico. If the culture of secondary schools in less developed countries penetrates traditional family influence, as hypothesized, this should be born out in the data among the sub-sample of Mexicans with a secondary education. This is clearly the case. Selecting out the group that has had some secondary education changes significantly the relative influence rankings in Mexico. Participation in secondary school, in contrast to the general population whose school participation is essentially at the elementary levels, accounts for the placement of 28 percent of the sub-sample at the medium and high levels of efficacy as compared to 8 percent for the family and 3 percent for the job. Figure 10 makes this even more meaningful. The impact of the family and job is at the medium efficacy level, while the school plays an important role in moving people into the higher reaches of efficacy. As in most countries the socialization process as a whole proved less effective in fostering a high sense of efficacy. In this context the findings take on added luster, since school participation is related to the placement of 38 percent of all those respondents found at the highest level. Secondary education plays a significant role in the political socialization process of this under developed country and has an important bearing on the national distribution of high efficacy among the more educated strata of the population.

FIGURE 10

RELATIVE INFLUENCE OF FAMILY, SCHOOL, AND WORK
GROUP PARTICIPATION ON POLITICAL EFFICACY
IN MEXICO, BY SECONDARY EDUCATION



We would expect the relative influence of the socialization agents to be different among the higher educated strata in the other four countries as well. As societies modernize the quality of family life changes. Succeeding generations of parents share the advantages of a higher education. Norms that once penetrated the traditional culture from the new secondary schools and sources of modern employment become increasingly redundant. Parents of the more educated children usually have higher education, are more attentive to political phenomena, inclined to encourage children's participation in family decisions, and are more available as socialization models.

Therefore, it is not entirely surprising to find the family playing a relatively greater socialization role among the educated people in the most developed countries.[31] In the United States and Italy, it replaces the job as the most significant socialization agent (Table 4). It displaces the work group in Germany becoming the second most effective socialization agent. Only among the British does the relative position of the family not improve. The participatory work environment in Great Britain has a strong effect on political efficacy both at the higher and lower educational levels.

In all countries (except Great Britain) the impact of the job is reduced or low (as in Mexico) among those with higher education. The increased social contacts, varied and competing sources of information, and generally wider horizons of the more educated combine to reduce the influence of the job. On the other hand, those in the developed countries with only primary education are less likely to have learned participatory skills in the family. Among this group, the job, if it inculcates modern norms related to participation and sense of political confidence, should have greater influence. This proposition was supported in the United States,

TABLE 4

THE RELATION BETWEEN FAMILY, SCHOOL, AND WORK GROUP PARTICIPATION AND POLITICAL EFFICACY AMONG THE TOTAL SAMPLES AND AMONG THOSE WITH SECONDARY OR HIGHER EDUCATION IN EACH OF FIVE COUNTRIES

	Family	School	Job
United States			
Total sample	20.0%*	17.8%	23.7%
Secondary or more	14.1	8.3	8.8
Great Britain			
Total sample	23.6	6.1	24.4
Secondary or more	19.0	6.9	31.0
Germany			
Total sample	9.6	13.3	16.1
Secondary or more	17.6	38.0	00.0
Italy			
Total sample	2.7	8.0	34.9
Secondary or more	18.8	2.6	6.4
Mexico			
Total sample	22.9	5.9	2.3
Secondary**	7.6	27.8	3.4

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*Each percentage represents the summed effect of a particular agent on medium and high efficacy after the D coefficient has been converted to a percentage.

**In Mexico the more educated strata includes only those with a secondary education, in the other four countries secondary includes high school as well as college education.

Germany, and Italy as the influence of work group participation on political efficacy was greatest at the primary level (Table 4).

The truncated effects of the socialization agents is clearer with education controlled. Among the most educated strata in the four more developed countries, family is twice as influential in the high efficacy range as either the job or school. The three agents have equal effect at the medium efficacy level. As we indicated above, the job is more important among those with only a primary school education. Here it has its greatest relative influence in the low to medium efficacy range where it accounts for twice the movement of either family or school. To summarize, family is most influential among the higher educated and it dominates the movement from medium to high efficacy. The job is more effective among the least educated where its greatest relative impact is in the medium efficacy range.

TABLE 5

D COEFFICIENT BETWEEN JOB PARTICIPATION AND POLITICAL EFFICACY, BY EDUCATION

	Secondary or More	Primary or Less
United States	.088	.19
Great Britain	.31	.235
Germany	.00	.163
Italy	.064	.374

Clearly, cross-cultural investigations of political socialization which strive for universal generalizations divorced from considerations of intra-national cultural differences and the developmental context of the socialization process may obscure some of the more important differences in the data, the revelation of which may provide a sounder base for macro-analysis.

IV

CONCLUSION

In this study we examined within a single model in each of five countries the relative influence of family, school, and work group participation upon different levels of political efficacy within a developmental context.

The chief investigative technique, dependency analsis, offers a number of substantive and methodological advantages. It not only permits an estimation of the relative role of the agencies but also tells us how each independently affects each level of the dependent variable. The latter information must ultimately be built into our models of the socialization process. A major problem in the social sciences is that much of the information communicated falls on deaf ears because of the high levels of technical expertise assumed of the would be recipients. A definite advantage of dependency analysis is the readily interpretable nature of the findings: dependency coefficients easily converted to percentages.

Turning now to the major findings:

1. The job: Although the job may be the most immediate environment for the adult respondents in the five countries, it definitely is not universally the most influential socialization agent. More importantly, its influence and that of the other agents varies considerably with the developmental level of the country.

2. Linearity: The relations between the independent and dependent variables are not linear. That is, the socialization agents do not have equal impact at the medium and high efficacy levels. Therefore, a mode of analysis based on the assumption of linear relations would have obscured important differences in the data.

3. Truncated effect: summing the influence of each of the three agents across the five countries shows the face-to-face environment of the family and job to be more influential in developing a sense of efficacy than the broader, less intimate school environment. This finding is similar to our previous experience in the Caribbean in which the family and peer group are more influential than the wider, less personal milieu of the school in developing a sense of political confidence among adolescents. The job is slightly more effective in moving people from low to medium efficacy and the family from medium to high.

The truncated effects are clearer with education controlled. Family dominates the movement from medium to high among the more educated while job is most influential among the least educated where its greatest relative effect is at the medium efficacy level. However, there is considerable cross-national variation which suggests that at this stage in our research we might do better to focus on isolating the system level developmental and cultural characteristics that account for the variations rather than attempt universal generalizations about relative influence based on a small number of dependent variables and a narrow range of agential characteristics.

4. Development and relative influence: Our study suggests the following link between levels of economic and social development and the relative role of the family, school, and work group in the socialization process

During the pre-industrial phase the family begins to distinguish itself from the lineage group and take a short-extended or nuclear form. Schooling outside of the family is not likely to exist or to operate only at the primary level which often is not culturally distinct from the family. Work environment is pre-modern, new work norms have not penetrated or exist only at low intensity levels. At this stage in development the family dominates the socialization process.

As economic and social development continues, culturally distinguishable secondary education expands. Industrialization leads to different forms of employment that penetrate society and intensify participation norms and new work relations. Both the school and job now compete with and displace the earlier dominance of the family. In later stages of development the quality of family life changes as parents become more educated and attentive to political phenomena. The relative influence of the school decreases as the norms and information it imparts become increasingly redundant and the impact of family reaches greater parity with job influence.

Among the five countries surveyed, Mexico is the least developed and the closest fit to the model of a less-developed country. Here we do find the family dominating the political socialization process followed at considerable distance by the school and job. In the two countries in the middle rank of the developmental scale, family dominance does succumb to the enlarged roles of the work group and school. In the United States and Great Britain, the two most developed countries, the influence of the school predictably declines in relative importance while the family rivals the job in influence.

5. Relative influence of agents among the more educated: We hypothesized that the expansion of secondary education is likely to have a very different short-term effect in less industrialized nations than its long-range impact in the more developed countries. In Mexico, the expectation was that among the small minority exposed to secondary education, the initial impact of this non-redundant

stimulus would be to challenge the pre-eminent position of the family in the socialization process. The data clearly support this contention. Among the more developed countries, however, the expansion of secondary education has led to succeeding generations of better educated parents. The quality of family life has changed and new norms that once penetrated the society from work group and school have become increasingly redundant. In two of the four most developed countries family becomes the most influential agent among the more educated strata while in Germany it displaces the job in assuming a position secondary to school influence.

The stronger showing of the secondary school among the more highly educated in Germany (particularly among the younger respondents) is reminescent of the secondary school's strong penetration in Mexico. Some authorities have argued that the experience of Germany since World War II resembles in some respects that of new nations. Faced with the task of creating a new political culture, the Germans needed to rebuild and change the schools. To the extent that demands for more emphasis on student participation in the schools have been realized, the resultant increase in school impact should be similar to the penetration of a less developed country by modern secondary education. That is to say, we would expect to find as we did that secondary education in Germany has an important influence upon the development of political efficacy.

In every country (except Great Britain) job influence is reduced or low (as in Mexico) among those with higher education. Competing information sources and the broadened horizons of the educated combine to reduce work group effect. Among the more developed nations job environment has its greatest impact among the least educated. The strata less likely to have learned participatory skills in the family.

Only in Great Britain does work environment have a significant influence on political efficacy both at the high and low education levels. It is likely that the history of labor organization in Great Britain has played on important role in intensifying the employee's sense of job participation and its translation into political confidence, both among the lower and middle classes. For example, British unskilled, skilled, and white collar workers all distinguish themselves from their counterparts in the other nations by their greater sense of freedom to protest job decisions that are not in their interest.

6. Socialization and policy implementation: What insights can the policy planner or interested citizen expect from the student of political socialization? To date, social scientists have given little attention to the implications of socialization research for the inculcation of values. This has been particularly troublesome for those interested in political and social development, an area in which the scholar's interest in sociopolitical manipulation has been

more overt. Certainly a better understanding of the socialization-polity linkage, in both historical and comparative perspectives, would not only enrich our theoretical interest in patterns of political change, but would contribute also to our pragmatic interests in the direction of political evolution. Therefore it seems useful to illustrate how a portion of our findings bear on certain practical problems of political development.

Mexico, the least industrialized country, may be the more interesting case. You will remember that the family dominated the socialization process for the sample as a whole. But only a small portion of this population had been exposed to secondary education. Among those who had, the participatory milieu of the school played a significant role and had an important bearing on the national distribution of efficacy. Assume for the moment that a national policy planner is concerned with increasing the level of political participation. There appears to be a relatively uncomplicated link between organizational involvement and political participation (Nie, Powell, and Prewitt). However it seems prudent to point out that many development experts are concerned about the burdens of this form of mobilization, particularly from the strata which does not have the attendant gate keeper attitudes which the planner may wish to have associated with political life. Since we are able to link political participation, efficacy, and participatory environment of the secondary school in Mexico, one of the more malleable social institutions, three questions are raised:

1) What would be the effect on the national distribution of political efficacy of expanding by two-thirds the proportion of the school age population who actually attend secondary school (now 12%)?
2) What would be the impact on national distribution of efficacy of increasing by two-thirds students' sense of participation in the secondary schools?
3) Can we assume that those who possess higher levels of political confidence also are more politically tolerant and accommodating?

At present we cannot answer the last question in Mexico. However, there is data which can be brought to bear which will be the subject of future inquiry. While we possess no crystal ball, under a set of assumptions we can give a partial answer to the first two questions by providing the planner with estimates based on projection of the effect of changing the distributions.

Assuming the dependence relationships remain the same, increasing the present secondary school population by two-thirds would have its primary effect on those with low efficacy. Their ranks would be reduced by 8 percent as they moved for the most part into the medium efficacy range. The cumulative consequence of increasing the secondary school population and increasing the sense of school participation by two-thirds would be to reduce the national distribution of low efficacy by 16 percent*—the majority of these people being moved into the medium efficacy level with a 3 percent increase in high efficacy. The reduction by 16 percent of those with low efficacy clearly would have an impact on the political culture of the country, particularly if this form of mobilization via the schools rather than through organizational involvement is accompanied by learned norms of tolerance and compromise.

Because the secondary school population is so small, however, boosts in that population even of this magnitude represent a minor intervention. Changes of 200 to 300 percent are necessary if major restructuring of the political culture is demanded.

7. Structural effects: With the exception of Germany, the additive effect of the three agents on political efficacy follows the level of economic and social development in the five countries (Table 3). A variant of the structural effect thesis may be helpful in interpreting this change.[32] That is, people with similar scores on an independent variable (high agential participation) will have

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*Sixteen percent is a low estimate since there will be an additional boost from the structural effect of increasing participation in the schools. See below for "structural effect."

different rankings on the dependent variable (political efficacy) as the distribution of agential participation differs in the groups or society in which they are members. In other words, an individual's participatory experience in a socialization agency is more likely to be translated into political confidence in a society in which participation in non-political decision making is more the norm than the exception. Thus the additive effect of the three agents plus a fourth factor, the distribution of these participatory experiences, contribute to the development of political efficacy.

The frequency of agential participation is linked to education of the respondent in each country. The size of the educated strata increases with developmental level. Therefore we might expect the positive relation between development and the additive influence of the agencies.

On the other hand, we have surveyed only a limited range of variables. Non-political participation has a natural and necessary agential link. But it is not difficult to think of variables for which this is not the case. For example, if we examined opinion or issue formation the congruence between the opinion climate of the three socialization agents and that of the respondent would most likely decrease as we moved from the less developed to the more developed nations where the respondent is exposed to an enlarged communication media and more varied and compelling sources of information.

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As a prior step to extensive field work in which we will examine more closely the links between levels of development and the political socialization process, we have applied some of our hypotheses to the data at hand. We are hopeful that these preliminary findings will be of some aid in raising questions and charting research strategies.

FOOTNOTES

[1] David Easton and Robert Hess, "Youth and the Political System," in Lipset, S. M. and L. Lowenstein (eds.) Cultural and Social Character (New York: Free Press, 1961), pp. 226-251; Jack Dennis, "Major Problems of Political Socialization Research," Midwest Journal of Political Science, 12 (February, 1968), pp. 85-114; William C. Mitchell, The American Polity (Glencoe: Free Press, 1962), Chapter 7; and Fred Greenstein, Children and Politics (New Haven: Yale University Press, 1965), pp. 10-15.

[2] Kenneth P. Langton, Political Socialization (New York: Oxford University Press, 1969), Chapter 7.

[3] Robert D. Hess and Judith Torney, The Development of Political Attitudes in Children (Chicago: Aldine, 1967); M. Kent Jennings and Richard G. Niemi, "The Transmission of Political Values from Parent to Child," American Political Science Review, 62 (March, 1968), pp. 169-184; and Kenneth P. Langton and M. Kent Jennings, "Political Socialization and the High School Civics Curriculum in the United States," American Political Science Review, 62 (September, 1968), pp. 852-867.

[4] For an excellent review of much of the literature and research in political socialization see Jack Dennis, "Recent Research on Political Socialization: A Bibliography of Published, Forthcoming, and Unpublished Works, Theses, and Dissertations, and a Survey of Projects in Progress." Prepared for the Theory and Research Working Committee on Political Socialization of the Council on Civic Education, Lincoln Filene Center for Citizenship and Public Affairs, Tufts University, Medford, Massachusetts, 1967; and John J. Patrick, "Political Socialization of American Youth: A Review of Research with Implications for Secondary School Social Studies," High School Curriculum Center in Government, Indiana University, Bloomington, Indiana, March, 1967.

[5] Philip E. Converse and Georges Dupuex, "Politicization of the Electorate in France and the United States," Public Opinion Quarterly, 26 (1962), pp. 1-23.

[6] Langton and Jennings, *op. cit.*; John Vaizey, "Economics of Education," *International Social Science Journal*, 14 (1962), p. 627; Frederick Harbison and Charles A. Myers, *Education, Manpower, and Economic Growth* (New York: McGraw-Hill, 1964); Dwaine Marvick, "African University Students: A Presumptive Elite," in James S. Coleman (ed.), *Education and Political Development* (Princeton: Princeton University Press, 1965), pp. 463-497.

[7] Gabriel Almond and Sidney Verba, *The Civic Culture* (Princeton: Princeton University Press, 1963). For sampling procedures and survey methods employed, see Chapter 2 and Appendices A and B in *The Civic Culture*.

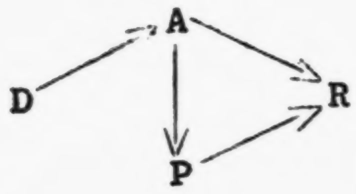
[8] Lester W. Milbrath, *Political Participation* (Chicago: Rand McNally, 1965), pp. 56-59; Angus Campbell, *et al.*, "Sense of Political Efficacy and Political Participation," in Heinz Eulau, *et al.* (eds.), *Political Behavior* (Glencoe: Free Press, 1959), pp. 170-173; Angus Campbell, *et al.*, *The American Voter* (New York: Wiley, 1960), pp. 103-105, 480-481; David Easton and Jack Dennis, "The Child's Acquisition of Regime Norms: Political Efficacy," *American Political Science Review*, 61 (March, 1967), pp. 25-38, and Langton, *op. cit.*, pp. 142-144.

[9] The direction of the arrow between efficacy and participation is considered more closely on pages 8-9.

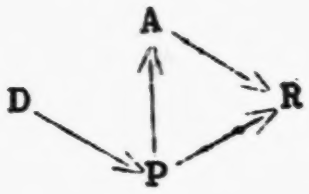
[10] Hubert M. Blalock, Jr., *Causal Inferences in Nonexperimental Research* (Chapel Hill: University of North Carolina Press, 1961). Blalock expanded many of Herbert Simon's earlier observations. Herbert A. Simon, *Models of Man* (New York: Wiley, 1957), Chapter 2, "Spurious Correlation: A Causal Interpretation."

[11] Hugh D. Forbes and Edward R. Tufte, "A Note of Caution in Causal Modelling," *American Political Science Review*, 62 (December, 1968), pp. 1258-64, have shown that analysts are not able to provide convincing validation for competing models. In fact, it often may be possible, with modest changes in research design, to empirically validate alternative models by working with a higher order model. An excellent example of the problem can be found in Charles F. Cnudde and Donald J. McCrone, "The Linkage Between Constituency Attitudes and Congressional Voting Behavior: A Causal Model," *American Political Science Review*, 60 (March, 1966), pp. 66-72. Models II and III are set forth as alternative models and tested separately. The reversal

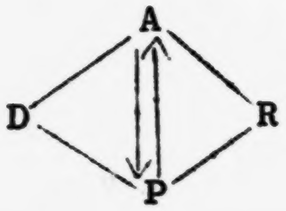
Model II



Model III



of the vertical arrows connecting A and P is a troublesome feature in attempting to fit a system, whether isolated or not, to real data. It is interesting to note that both models are sub-models of a more complex model originally used by Warren E. Miller and Donald E. Stokes, "Constituency Influence in Congress," American Political Science Review, 57 (March, 1963), pp. 45-56. The estimation of the strength of the various paths in the complex model can provide the basis for discriminating between Models II and III, that is, the determination of which paths vanish. The complex model can be estimated if two exogeneous variables are added in the research design. One variable should affect A and the other P. Blalock's most recent work has moved in this direction.



[12] Sewall Wright, "Correlation and Causation," Journal of Agricultural Research, 20 (January, 1921), pp. 557-85; Sewall Wright, "The Interpretation of Multivariate Systems," in O. Kempthorne, et al., Statistics and Mathematics in Biology (Ames: Iowa State College Press, 1954), pp. 11-33.

[13] Carl F. Christ, Econometric Models and Methods (New York: Wiley, 1966), pp. 404-07.

[14] Daniel Lerner, The Passing of Traditional Society (New York: Free Press, 1958), Chapter 2, pp. 43-75.

[15] Arthur W. Burks, "Cause, Chance, and Reason: An Inquiry into the Nature of Scientific Evidence," manuscript, 1963, Chapter 1.

[16] James S. Coleman, Introduction to Mathematical Sociology (Glencoe: Free Press, 1964), Chapter 4.

[17] Thus, $PE_{\bar{f}s}$ is the percentage of the group of persons, who are both low in family participation and high in school participation, with high political efficacy. PE_{fs} is the percentage with high efficacy of the group of persons who are high in both family and school participation.

[18] This is analogous in a multivariate sense with a quasi-experimental procedure of grouping a population on different states of an independent variable and comparing the differences in conditional probabilities of achieving given states of a dependent variable.

[19] As stated above, the coefficient of .168 indicates that exposure to job participation is related to the movement of 16.8 percent of the *sample* into the medium efficacy range. However only 58 percent of the sample reached the medium level on the efficacy scale. Therefore, the coefficient of .168 actually accounts for the placement of 29 percent of *those found at the medium efficacy level*.

[20] Almond and Verba did examine the question of relative effect in the *Civic Culture*. After their analysis of the five nation data they concluded that the job was the most important of the three agents in the development of political efficacy or competence. "There appears to be a rank order in the strength of connection between nonpolitical types of participation and political competence: the connection becomes stronger as one moves from family to school to job participation." (page 371). Their summary was based on the analysis of separate contingency tables. The influence of the different agents was not observed within a single model and the independent effect of each agent estimated. Nor does a careful reading of the evidence they present regarding the cumulative effect of participatory experiences (page 367, table 26) support their major generalization.

[21] The sum of the coefficients leading from job, family, and school to medium efficacy for all five countries is .51, .46, and .22, respectively.

[22] This reflects to some degree other findings among secondary students in the Caribbean where family politicization proved effective in developing a sense of efficacy in both the medium and high range while only the more intimate face-to-face groups such as the family and peer group—in contrast to the school—had an impact at the high efficacy level. Kenneth P. Langton and David A. Karns, "The Relative

Role of the Family, Peer Group, and School in the Development of Political Efficacy," Western Political Quarterly (Spring, 1969).

[23] For a provocative social history of family life from medieval to modern times see Philippe Aries, Centuries of Childhood (New York: Knopf, 1962).

[24] Syed Nurulla and J. P. Nalik, A History of Education in India (Bombay: Macmillan, 1951); George Harley, "Notes on the Poro in Liberia," Peabody Museum Papers, Vol. 19, No. 2, Cambridge, Mass., 1941; Frank Bonilla, "Brazil," in James S. Coleman (ed.), Education and Political Development (Princeton: Princeton University Press, 1965), p. 199; and Malcolm H. Kerr's discussion of "elementary" education in Egypt op. cit., pp. 174-175; Robert LeVine, "Political Socialization and Cultural Change," in Clifford Geertz (ed.), Old Societies and New States (New York: Free Press, 1963), p. 282; Helen Kitchen (ed.), The Educated African (New York: Praeger, 1962), pp. 145-59; Alexander T. Edelman, Latin American Politics and Government (Homewood, Illinois: Dorsey, 1965), pp. 120-124; and UNESCO, World Survey of Education, II: Primary Education (Paris, 1958).

[25] Edith Clarke, My Mother Who Fathered Me (London: Allen and Unwin, 1957); Madeline Kerr, Personality and Conflict in Jamaica (Liverpool: University Press, 1952); George F. Kneller, The Education of the Mexican Nation (New York: Columbia University Press, 1951).

[26] For an examination of the effect of information redundancy on school socialization see Langton and Jennings, "Political Socialization and the High School Civics Curriculum in the United States," op. cit.

[27] Although Italy clearly shares characteristics with less developed countries, Germany intuitively seems closer to the developmental level of the United States and Great Britain. However, the experience of Germany, particularly since WWII, resembles in some respects that of new nations or nations in the early stages of social development. Faced with the problem of creating a new political culture, there was the need to rebuild and change the schools. To the degree that demands and programs to increase student participation in the schools and make the classroom more democratic have been realized (Burgerverantwortung in der Gemeide, Frankfurt am Main, Institut Zur Forderung Offentlicher Angelegenheiten, 1950), we might expect the ensuing reduction in school redundancy to be similar in effect to the penetration of early

industrial societies by modern secondary education. That is, we might expect school participation in Germany to have a strong impact upon political efficacy, particularly at the secondary level.

[28] Isidro Castillo, "Rural Teacher Training in Mexico," in M. B. Lourenco Filho, et al., The Training of Rural School Teachers (UNESCO: Problems of Education Series-VII, 1953); Alexander Edelman, op. cit., p. 125; and Oscar Lewis, "Mexico Since Cardenas," in Richard Adams, et al., Social Change in Latin America Today (New York: Vintage, 1960), pp. 331-332.

[29] United Nations, The Economic Development of Latin America in the Post-war Period, 1964.

[30] This figure is for 1960. Document No. 49 presented by the General Secretary of UNESCO to the Conference on Education and Social and Economic Development in Latin America (Santiago, Chile, 1962). Cited in Aldo Solari, "Secondary Education and the Development of Elites," in Seymour Lipset and Aldo Solari (eds.), Elites in Latin America (New York: Oxford University Press, 1967), p. 459.

The UNESCO figure of 12 percent is closely reflected by the 15 percent of the Mexican sample who responded that they had attended a secondary or advanced technical school.

[31] An analysis of one agent's influence on efficacy within a single contingency table controlled for education will not tell us about possible complementary effects of other agents or the possibility that the effect of one agent could be masking the influence of the other. This problem clearly calls for some type of multivariate analysis where the impact of two of the agents can be controlled while examining the third. The use of contingency tables by Almond and Verba may account for their conclusion that family appeared to have little influence on political competance (efficacy) among those with higher education across the five nations. Our analysis suggests that the use of contingency tables underestimated the relative influence of the family among the more educated. Almond and Verba, The Civic Culture, p. 349.

[32] Peter M. Blau, "Structural Effects," American Sociological Review, 25 (1960), pp. 178-193; and Norman H. Nie, G. Bingham Powell, Jr., and Kenneth Prewitt, "Social Structure and Political Participation: Developmental Relationships," American Political Science Review, (June, 1969), forthcoming.

APPENDIX A

SCALE CONSTRUCTION AND CONTENT

In constructing the scales underlying the measurement of our variables, we encountered several of the same problems as other analyses using the Almond-Verba five nation study. After consideration, we made two decisions which differ considerably from the decisions of Norman Nie, G. Bingham Powell, and Kenneth Prewitt[1]. First, we chose to use Guttman scalogram analysis rather than factor analysis because we believe that each variable taps a single, cumulative dimension. Empirically, the coefficients of reproducibility for each of the five scales in each of the five nations exceeded 0.920, which supports this contention. Conceptually, we cannot find a reasonable response pattern to the questions composing any of our scales which would suggest that the dimension is actually a point preference dimension. If we accept the position that a Guttman or cumulative model is more applicable than a point preference model, the analyst must either use scalogram analysis or a factor analysis of a matrix of tetrachoric correlation coefficients. Factor analysis of a matrix containing product moment correlations, as used by Nie, et al., which have been generated by data based on the Guttman model will not necessarily reproduce the spatial locations of variables correctly. As Warren Torgerson has pointed out,

> Even though the items form a perfect scale, the point correlations may range from almost zero to unity. In general, if the items are ordered with respect to the attribute, any array of the matrix of inter-item point correlations will have the characteristic that the size of the coefficients decreases on each side of the principal diagonal. Barring items with identical marginals, the rank of the matrix of point correlations will be equal to its order, and hence a multiple factor analysis would yield as many factors as there are items. This results from the fact that the size of the point correlation between two items depends in part on the marginal distributions of the items.
> (Warren S. Torgerson, Theory and Methods of Scaling, New York, 1958, p. 312.)

If some criterion of significance of factors, i.e., contribution to variance or eigenvalue, such as Kaiser's criterion is used to limit the number of factors yielded, a perfect Guttman scale should yield three factors. The most removed items in the Guttman scale will have similar factor loadings, the lowest, and items in the center of the scale will have similar factor loadings, the highest. Consequently, we chose to use scalogram analysis rather than factor analysis.

Second, we felt that the item rotation, which developed in some cases, contained valuable information which should not be thrown away in a factor analysis. In other words, if questions 27 and 29 were in that order in the scalogram analysis for Germany, but 29 and 27 for Italy, this datum offers insight into national differences. To guarantee comparability cross-nationally, we performed separate scalogram analyses on each sample rather than assuming a single scale order was applicable to all five nations.

I. Political Efficacy Scale

Almond and Verba devised a five-item subjective competence scale which they felt measured the "extent to which /respondents/ believe themselves competent in their relations with government" (emphasis ours).[2] However one of the five items seems to be informational while another stresses participation.[3] This poses a dimensionality problem. One suspects that many of the relationships that were, or were not, discovered are affected by this distinction.[4] In short, their measure is an interesting one, but it does not appear to be a substitute for attitudinal measures of political efficacy found elsewhere in the literature.

The efficacy scale used in this study differs from the subjective competence measure on at least two counts. First, we only used the three original items which seemed to stress a subjective perception or belief in personal influence. We found that adding the participation item would not only raise the dimensionality question but, equally important, it would have increased artificially the correlation between our measures of efficacy and political participation. Second, the subjective competence measure stressed only local competence while our measure includes, in addition, three items reflecting perceptions of efficacy at the national level.

Items:

1. Suppose a regulation were being considered by (local government unit) which you considered very unjust or harmful, what do you think you would do?

2. If you made an effort to change this regulation how likely is it that you would succeed?

3. If such a case arose, how likely is it you would actually do something about it?

4. Suppose a law were being considered by (appropriate national legislature in each nation) which you considered to be very unjust or harmful, what do you think you would do?

5. If you made an effort to change this law, how likely is it that you would succeed?

6. If such a case arose, how likely is it you would actually try to do something about it?

II. Political Participation Scale

Items:

1. What about talking about public affairs to other people, do you do that nearly everyday, once a week, from time to time, or never?

2. Have you ever done anything to try to influence a local decision (of a local government unit)?

3. Have you ever done anything to try to influence an act of (specify appropriate national legislature)?

III. Participation in Family Scale

Items:

1. As you were growing up, let's say when you were around 16, how much influence do you remember having in family decisions affecting yourself—did you have much influence, some, or none at all?

2. At around the same time, if a decision were made that you didn't like, did you feel free to complain, did you feel a little uneasy about complaining, or was it better not to complain?

3. If you complained, did it make any difference in your parents' decision? Did it make a lot of difference, some, or none?

IV. Participation in School

Items:

1. In some schools the children are encouraged to discuss and debate political and social issues and to make up their own minds. How was it in your school—how much chance did the children have to express their opinions—a lot, some, or none at all?
2. If you felt you had been treated unfairly in some way or disagreed with something the teacher had said, did you feel free to talk to the teacher about it, did you feel a bit uneasy about talking to the teacher, or was it better not to talk to the teacher?
3. Would it have made any difference—a lot, some, or none?

V. Participation in the Job

Items:

1. We'd like to find out how decisions are made on your job. When decisions are made affecting your own work, do those in authority over you ever consult you about them—they usually consult you, do they sometimes consult you, does this happen rarely, or are you never consulted?
2. If a decision were made affecting your own work that you disagreed with strongly, what would you do—would you feel free to complain, would you feel uneasy about complaining, or is it better to accept the decision and not complain?
3. If you did complain, would it do any good?

Footnotes to Appendix A

[1] Norman H. Nie, G. Bingham Powell, Jr., and Kenneth Prewitt, "Social Structure and Political Participation: Developmental Relationships," American Political Science Review (June, 1969), forthcoming, Appendix B.

[2] Almond and Verba, op. cit., p. 231.

[3] How about local issues in this town or part of the country? How well do you understand them? Have you ever tried to influence a local regulation? Ibid.

[4] See Kenneth P. Langton, "Conjugal Power Structure and Political Socialization," paper given at Annual Meeting of the American Political Science Association, New York City, September 1966, pp. 14-16.

APPENDIX B

RANKING OF THE FIVE COUNTRIES BY MEASURES OF ECONOMIC AND SOCIAL DEVELOPMENT

Country	Real GNP Per Head 1961 ($USA)[a]	% Labor Force in Service Occupations 1960[b]	Newprint Consumption Per Person (kilograms) 1960[b]
U.S.A.	$2790.	42.0%	36.6
Great Britain	1749.	39.8	24.9
Germany	1591.	29.9	9.6
Italy	897.	22.9	5.3
Mexico	415.	21.3	2.9

Sources:

[a] Gross National Product (GNP) per head is an estimate of purchasing power in terms of United States dollars at United States 1961 prices. See P. D. Rosenstein-Rodan, "International Aid for Underdeveloped Countries," The Review of Economics and Statistics, 63 (May, 1961).

[b] United Nations, Compendium of Social Statistics: 1963 (New York: 1963).

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ABSTRACT

This report focuses on civic socialization and the links leading from three socialization agencies to political efficacy to political participation. More specifically, we examine four questions: What is the relative influence of school, family, and work group participation upon the development of civic efficacy? Are the agential effects truncated? Does relative influence vary cross-culturally? Can these cross-cultural differences be explained within a developmental context?

Adult probability samples from five nations at different levels of development form the data base. Dependency and path coefficient analysis are the major modeling techniques.

The relative independent influence of the three agents varies considerably across the five nations, but these rank order changes are predicted by our developmental model. The face-to-face environment of the family and job is more influential in developing a sense of efficacy than the less intimate school environment. Truncated effects are visible: Job is more effective in moving people to a medium level of efficacy (particularly among the least educated), family from medium to high (among the more educated). National structural effects combine with the additive impact of the agents to influence the development of efficacy.

We emphasize the implications of the findings for the policy planner by calculating the consequences of manipulating the school to affect national distributions of civic efficacy.

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